MASSACHUSETTS GENERAL COURT
SCIENCE RESOURCE OFFICE

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FINAL TECHNICAL REPORT TO THE NATIONAL SCIENCE FOUNDATION

SCIENCE AND TECHNOLOGY PROJECT
OVERVIEW AND EVALUATION

JANUARY 1982

MASSACHUSETTS GENERAL COURT

SCIENCE AND TECHNOLOGY PROJECT

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FINAL TECHNICAL REPORT

TO THE

NATIONAL SCIENCE FOUNDATION

NSF GRANT NO. ISP-7720768

SCIENCE RESOURCE OFFICE

STATE HOUSE ROOM 312

BOSTON, MA. 02133

JANUARY, 1982

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INSTRUCTIONS FOR FINAL PROJECT REPORT
(NSF FORM 98A)

This report is due within 90 days after the expiration of the award. It should be submitted in two copies to:

National Science Foundation
Division of Grants and Contracts
Post-Award Projects Branch
1800 G Street, N.W.
Washington, D.C. 20550

INSTRUCTIONS FOR PART I

These identifying data items should be the same as on the award documents.

INSTRUCTIONS FOR PART II

The summary (about 200 words) must be self-contained and intelligible to a scientifically literate reader. Without restating the project title, it should begin with a topic sentence stating the project's major thesis. The summary should include, if pertinent to the project being described, the following items:

- The primary objectives and scope of the project.
- The techniques or approaches used only to the degree necessary for comprehension.
- The findings and implications stated as concisely and informatively as possible.

This summary will be published in an annual NSF report. Authors should also be aware that the summary may be used to answer inquiries by nonscientists as to the nature and significance of the research. Scientific jargon and abbreviations should be avoided.

INSTRUCTIONS FOR PART III

Items in Part III may, but need not, be submitted with this Final Project Report. Place a check mark in the appropriate block next to each item to indicate the status of your submission.

a. Self-explanatory.
b. For publications (published and planned) include title, journal or other reference, date, and authors. Provide two copies of any reprints as they become available.
c. Scientific Collaborators: provide a list of co-investigators, research assistants and others associated with the project. Include title or status, e.g. associate professor, graduate student, etc.
d. Briefly describe any inventions which resulted from the project and the status of pending patent applications, if any.
e. Provide a technical summary of the activities and results. The information supplied in proposals for further support, updated as necessary, may be used to fulfill this requirement.
f. Include any additional material, either specifically required in the award instrument (e.g. special technical reports or products such as films, books, studies) or which you consider would be useful to the Foundation.

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

FINAL PROJECT REPORT
NSF FORM 98A

PLEASE READ INSTRUCTIONS ON REVERSE BEFORE COMPLETING

PART I–PROJECT IDENTIFICATION INFORMATION

1. Institution and Address	2. NSF Program	3. NSF Award Number
Massachusetts State Legislature Boston, Mass. 02133	Legislative Body Assistance	1SP-7720768
	4. Award Period From 09-77 To 11-80	5. Cumulative Award Amount $85,000.00

6. Project Title
Developing Science and Technology Through the Massachusetts General Court

PART II–SUMMARY OF COMPLETED PROJECT *(FOR PUBLIC USE)*

In 1974 the Massachusetts General Court realized that its members must act on a creasing number of complex issues with scientific and technological content and that it needed a technical capability in its professional staff and research services. The Massachusetts General Court then applied for and received an NSF grant to create an office provide legislators and staff with information on the scientific and technical aspects of lic policy. Upon the expiration of this grant, the continued development of the science fice was made possible under the present grant which was awarded in September, 1977.

Massachusetts is unusually rich in science information resources such as universitie consulting agencies, federal agencies, and public interest groups. Yet prior to the NSF the Legislature had no effective means of availing themselves of these resources. The Science Resource Office was designed in response to this situation as a joint House and Senate non-partisan research service. Any legislator or staff member may request info mation from the Office. A SRO staff member, with the help of key external resource people, will then contact individuals in academia, business, government, and public inter groups and use their expertise to assist in preparing the information needed by the legi lator in a timely and usable way. The individuals who do assist are then added to a r source directory (which currently has over 1,000 entries) for future reference. In addit to research, the SRO also organizes conferences and recommends individuals to provide pert testimony. Other approaches and techniques used to gather and disseminate infor are a monthly newsletter, computer conferencing and information exchange with other s an Economic Policy Analysis Model, and audio-visual technology.

The Office has grown substantially, from a low of 80 requests per year to a curr rate of 600 requests per year. The Massachusetts General Court has recognized the su stantial contribution of the SRO to the legislative process by its decision to assume al funding for the Office. Currently the Office is staffed by a Director, a Research Coordinator, six research assistants, two secretaries, and an active intern program.

PART III–TECHNICAL INFORMATION *(FOR PROGRAM MANAGEMENT USES)*

1. ITEM *(Check appropriate blocks)*	NONE	ATTACHED	PREVIOUSLY FURNISHED	TO BE FURNI SEPARATELY TO Check (✓)	 APP
a. Abstracts of Theses					
b. Publication Citations					
c. Data on Scientific Collaborators					
d. Information on Inventions					
e. Technical Description of Project and Results					
f. Other *(specify)*					

2. ~~Principal Investigator~~/Project Director Name *(Typed)*	3. ~~Principal Investigator~~ Project Director Signature	4. Dat
Dr. John J. Warren	John J. Warren Ph.D.	5/

NSF Form 98A (5-78) Supersedes All Previous Editions

Form Approved O

INTRODUCTION

During the past decade, state legislators have responded to the re-emergence of federalism with a new awareness that the legislature is the primary institution for public policy formulation in the state. State legislatures must now decide policy in areas of energy, environment, health, safety, and economic development which twenty years ago were rarely even the responsibility of the federal government. To permit legislators the time necessary for the careful study of these issues, legislatures have begun to improve their procedures and develop professional auxiliary services.

Progressive state legislative leaders, such as Senate Presidents Kevin B. Harrington and William M. Bulger, and House Speakers David M. Bartley and Thomas W. McGee, put Massachusetts at the forefront of the movement to modernize state legislatures. For example, Massachusetts has created joint legislative committees, instituted personnel offices in each branch, established the Legislative Service Bureau to administer professional staff for joint committees, increased office space and the number of staff positions, and tried to upgrade legislative salaries to be sufficient for full-time professional legislators.

In addition, the Massachusetts Legislature used a National Science Foundation grant to create the Science Resource Office to provide legislators and their staffs with a source of nonpartisan information on the scientific and technical aspects of public policy. Of the 8000 bills that come before the Massachusetts

Legislature annually, many require sophisticated scientific or technical knowledge to understand and evaluate. Citizen legislators generally do not have the background, nor staff the time, to work comfortably on all these issues.

In the need of information, legislators and staff are often forced to turn to the Executive Branch or to professional lobbyists. These are often excellent sources of information, but in the legislative process they are political actors who can often devote greater resources to the issues in which they have particular interests than the Legislature can to the 8000 bills for which it is responsible. Legislators and staff are at a particular disadvantage when, as is frequently the case, they require information within days, or even hours, for hearings, debates or votes.

To act independently, legislators and staff need a source of unbiased research. In most states there are highly qualified resources outside of the political process with information useful to legislators. In Massachusetts, such sources of information abound. Within 20 miles of the Legislature there are universities, consulting firms, research centers, regional federal offices, public interest groups, and libraries of international repute.

Yet prior to 1974, the Massachusetts General Court had no systematic access to these resources. To encourage state governments to formalize ways of tapping such resources the National Science Foundation offered grant funds under its Division of Intergovernmental Science and Public Technology. As part of the overall effort to modernize and provide professional assistance

for legislators, the Massachusetts legislative leaders applied for, and received, an NSF grant for $45,000. The General Court provided matching funds, as well as in-kind contributions, and created the Science Resource Office in January 1975.

Senate President Kevin Harrington and House Speaker David Bartley, the co-principal investigators of the grant, accepted the recommendation of a search committee to appoint Dr. Chandler H. Stevens as Project Director. Dr. Stevens had previously received a doctorate in economics from the Massachusetts Institute of Technology and had served as a Representative in the Massachusetts State Legislature. The President and Speaker also appointed three Senators and four Representatives to the Joint Science Resource Committee to oversee the office projects, and named Senator Robert McCarthy and Represenative Thomas Mahoney to chair the Committee. The President and Speaker appointed members of both parties to the Committee to indicate that the Science Resource Office was to provide nonpartisan professional service to all members, regardless of party or tenure.

Dr. Stevens acted quickly to secure additional funding. The NSF responded to a Dr. Stevens proposal by awarding an IPA grant of $83,000 and assigning NSF staff member David Richtmann to the Science Resource Office. In 1976 the NSF awarded a renewal grant of $65,000, and with these grants and legislative matching funds the office hired two project assistants and two secretaries. Dr. Stevens and David Richtmann created a

Science Intern Program to supplement staff with graduate and undergraduate students; and, between 1975 and 1977, they began a series of creative and experimental programs to provide the Legislature with access to members of the scientific and technical communities.

As the legislative session of 1977 came to a close, the National Science Foundation assigned Mr. Ritchmann to a special project in the White House. Shortly thereafter, Dr. Stevens resigned to work on an interstate project of his own. Prior to their departure they authored a report describing project activities developed under the initial grants and requesting that the National Science Foundation approve additional funds to continue the development of the office. The National Science Foundation answered the request by awarding a new grant (#772068) for $85,000, effective September, 1977. To implement the grant, the Senate President and House Speaker appointed John J. Warren, Ph.D. Acting Director in September, 1977, and Director in June, 1978.

In March, 1978, the National Science Foundation awarded the SRO a $25,000 grant under the State Science, Engineering and Technology Program, to devise a plan for improving the Office's Technical Studies Program. With Jeremiah Murphy, Ph.D. serving as Project Coordinator, the plan was completed and submitted to NSF a year later.

With the appointment of Dr. Warren, a new phase of the Office began. The Director reorganized the structure by emphasizing the most promising of the programs that Dr. Stevens and Mr. Richtmann had begun. In particluar, he charged the Research Coordinator, Robert Capstick and his successor, Jeremy Eden, with the task of developing fully the Inquiry-Response Service,

which handles requests for information from legislators and their staffs. In addition, all staff researchers are assigned to the service. Though each staff member may be assigned responsibility for another office activity, the Inquiry-Response Service is the common and principal labor of the office. With this reorganization, the Inquiry-Response Service has increased the number of responses per year from 81 to over 500.

In 1980, the Massachusetts State Legislature assumed all funding of the Science Resource Office; and, in its most recent action, appropriated $196,000 to fund the nine staff positions of the office.

It is unlikely that the Massachusetts Legislature would have made the experiments necessary to designing a successful research office of this type without the National Science Foundation grants. With these funds the National Science Foundation recognized that state legislators need technical assistance to assume many new responsibilities, particularly those previously met by the federal government. By offering grants with flexible guidelines, the National Science Foundation also recognized that each state is unique and that only state officials could design an office appropriate to their needs.

This report describes the services of the Science Resource Office during the period of the final grant under the leadership and guidance of Senate President William M. Bulger and House Speaker Thomas McGee. We offer this report to share our ideas and experience with those interested and involved in the development of professional state legislatures.

SERVICES

During the past three years the Science Resource Office has provided five distinct services: The Inquiry/Response Service, Technical Studies, the Massachusetts Economic Policy Analysis (MEPA) model, the Conference and Seminar Program, and Politech. The following sections describe the purpose and operation of each service. The Appendix contains a generous sampling of assignments which each service has undertaken.

THE INQUIRY/RESPONSE SERVICE

Through the Inquiry/Response Service the Science Resource Office staff provides legislators and staff with research assistance. Legislators and staff may request information ranging from a single statistic to issue briefs and extensive files. The Inquiry/Response Service responds to these requests by rapidly contacting a wide range of resources, collecting the requisite information, and presenting the material to the legislator or staff member.

The Science Resource Office has designed the Inquiry/Response Service to assist legislators and staff who are responsible for many areas of legislation in which they do not have an adequate background, or sufficient time, to research issues as thoroughly as they would like. Consequently, the Service accepts assignments which vary widely in topic and format. Despite the

word "science" in our title, the Service is not limited to a narrow range of technical and scientific issues.

Typically, the Service will address any issue that might arise with legislation concerning energy, environment, economy, health, safety, human services, social sciences, transportation, rural affairs, and urban affairs. But the office encourages legislators to use the Service for any research assistance.

The Service responds with a variety of formats to ensure that legislators and staff receive information in a form most useful to them. "Memos" generally contain the answer to very specific requests for statistics, definitions, bill or statute status, or other facts as well as the sources of information. "Issue briefs" are normally two to six page papers which describe differing views of an issue, possible state actions, a bibliography of material on file, and resources available for further information. "Fifty-state surveys" describe how the legislature, agencies, or various groups in the fifty states have responded to a particular issue. "Extensive files", including 50 to 100 documents on a single issue, act as a working library. "Annotated bibliographies" briefly describe documents concerning a particular issue which the Office has on file. These bibliographies permit the Office to share its files more effectively. "Resource Directories" on a particular subject list individuals and organizations knowledgable about an issue and representing a range of views. Table I lists examples of assignments which the Service has produced since January 1981. Appendix B contains a complete listing of inquiries made from January 1, 1981 to June 1981.

Table I

Examples of Inquiry/Response Service Assignments

Memos:

Status of Heat Pump Bill
Role of Wisconsin Citizens Utility Board
Cancer Rates in Selected Massachusetts Towns
Definition of Respiratory Therapist
Definition of Forensic Dentist
List of Retired Hydro Power Sites in Massachusetts
Effects of Nuclear Plants on Infant Mortality Rate
Allocation of $300 Million in Local Aid According to Certain Formulas
Allocation of $1 Million to Certain Local Agencies According to Certain Formulas
Status of Cosigner Legislation
Dangers of Nutramigen
Dangers of Chloradane

Issue Briefs:

Acid Rain: Causes and Effects
Drinking and Driving: The Effects of Raising the Drinking Age on Highway Safety
Truth-in-Testing: An Analysis
Cancer Registry: A Description
Water Shortage: The Potential in Massachusetts
Water Conservation: Techniques
Hospice: A definition
Daylight Savings Time: Its Effect on Energy Conservation
Garbage to Energy: A Primer
Smoking: Effects on Productivity
Health Maintenance Organizations: A Method of Health Cost Containment

Annotated Bibliographies:

Agent Orange
Acid Rain
Midwives: Legislation
Bartley-Fox Gun Control Law: Reports on its Effects

Fifty State Surveys:

Drinking and Driving; Penalties in the 50 States for Driving While Intoxicated
Generic Drug Laws: Status and Evaluation in the 50 States
Gasohol: Use in State and Local Government Fleets

Fifty State Surveys:

Tetrachloraethylene (TCE) Contamination: Experience in the 50 States
Professional License Fees: Fees for Selected Licenses in the 50 States
Veterans Preference in Civil Service: How the 50 States Have Responded
Utility Statistics: Tables of Oil, Gas, Electricity Prices
State Revenues: Pie Graphs
Census Data: Massachusetts Cities and Towns
School Tax Rate: Massachusetts Cities and Towns
Rural Unemployment: Percentage in Massachusetts

Files:

Fuel Adjustment Clauses: Pros and Cons
Juvenile Justice: Responses to the Juvenile Serious Offender
Hazardous Waste: Legislation and Regulation
Free Enterprise Forces: Pros and Cons
Lifeline Utility Rates: Pros and Cons
Lifeline Utility Rates: Legislation in the Fifty States
Conservation Plans: The Cities and Towns of Massachusetts

All legislators and staff members may use the Service simply by discussing their request with the Research Coordinator or one of the research staff. The researcher is responsible for identifying a wide range of resources, collecting and verifying information, and writing impartial responses to the legislative inquiry.

All staff researchers are college graduates and full-time employees. We have found these to be the minimum qualifications requisite to developing expertise, continuity and working relations with legislative staff. Our reliance on college graduates is the product of our experience with various combinations of staff and student interns. We have learned that interns who are available for only a few days a week, fifteen or twenty weeks a year, cannot substitute for professional staff. However, carefully chosen and properly directed, interns are invaluable as a supplement to professional staff. The Office operates an active intern program for fall and spring semesters and participates in the legislative internship program during the summer.

To respond to an inquiry, the research assistants rely on the voluntary assistance of individuals and organizations for information. The Service has begun to develop an effective system for identifying individuals at universities, consulting firms, regional federal agencies, libraries, public interest groups and businesses that are willing to be of assistance to the Legislature. Though the Science Resource Office

does not have formal relations with any organizations, in some areas individuals who are well established in their field have generously agreed to act as resource brokers. For example, Mr. Israel Katz, the current Chairman of the Massachusetts Engineering Council, and Dr. Richard Egdahl, Vice President of Health Affairs at Boston University, suggest engineers or health field experts respectively, in Massachusetts, who will assist on a particular assignment.

The Service has also compiled an extensive Resource Directory to provide the Legislature with systematic access to sources of information. Currently, the Directory lists more than 2,000 resources in nearly 200 categories. The staff is continually adding to the Directory as with each project they discover new resources. The staff then uses the Directory at the beginning of each new project to identify individuals who will be of assistance. It is often astonishing, and always gratifying, that virtually everyone we call is willing to share their time, experience, and files with our office. Because of this generosity, the Directory is a successful substitute for formal networks of sources.

The Resource Directory exemplifies the benefit of a central research office. In the Legislature, 200 offices are responsible for the same 8,000 pieces of legislation. Although each legislator has a unique set of interests, there are scores of proposals which are of concern to large numbers of legislators. Frequently, many of the

legislators must go through the process of identifying the same sources to address similar questions. A central resource office can reduce this repetition. A source once used is immediately available for all future questions in the appropiate area. Likewise the service can use reports and information from completed projects to respond immediately to inquiries for even esoteric information.

To share resources and information effectively, the Service has developed a monthly newsletter which is integral to the success of the Inquiry/Response Service. The newsletter contains substantive information and also explains with examples how the Inquiry/Response Service can assist legislators and their staff. The office sends the newsletter to every legislator and staff member during the first week of each month to provide frequent and regular notice of the work which is available. In addition, each newsletter contains an order form listing available issue briefs which are very useful for sharing information on issues which arise frequently.

To broaden the range of topics and formats, to serve staff as well as legislators, and to reduce the length of time necessary to complete assignments, the Director reorganized the office by making the Research Coordinator responsible for the Inquiry/Response Service and assigning all staff researchers to the Service. By 1980 the staff had grown to adequate size, the Resource Directory created, and the newsletter begun. The results of these actions have been a dramatic increase in the number of legislators who use the

office and the number of responses to legislative inquiries:

TABLE II

Year	Number of Responses
1976	71
1977	79
1978	139

These figures alone demonstrate the foresight of the National Science Foundation when they offered grants to develop the office.

Further, this growth explains the willingness of the Massachusetts General Court to assume all funding of the office. We expect the rate of growth to continue in 1982.

CONFERENCE AND SEMINAR SERVICE

When the Science Resource Office responds to an inquiry with a memo or issue brief it acts as an intermediary between the source of information and the legislator. Occasionally, however, it is valuable for legislators and staff to meet directly with these sources. The Office provides a Conference and Seminar Service to arrange such programs. A successful program is an opportunity to develop the complexities of a problem and clarify particular points of confusion. It can also generate an enthusiasm for working on a problem which a written study simply cannot do.

The program often fosters a rapport between the guest experts and the political leaders who share their interests. This relationship can be used to provide further research and to develop a working relationship with the institutions outside the Legislature.

This Service offers programs ranging from personal meetings of an individual expert and a legislator to a full-day conference with workshops, luncheon, and a large number of participants. Programs can also vary with respect to the audience, role of the legislator, and the depth and breadth of topic.

The particular difficulty in arranging a successful program is that it must compete with the overcrowded and hectic schedules of the legislators. Most legislators and staff have several conflicting hearings, meetings, sessions, or other appointments during the entire time the Legislature is in

session. To find a time convenient to a number of legislators is extremely difficult. To reduce this problem, the Office encourages the policy that requests to organize a formal program come from both the House and the Senate Chairmen of the Joint Committees. The Appendix contains a complete listing of all conferences and seminars which the Office has sponsored.

Four examples, from the past three years illustrate the capabilities of this resource. On May 21, 1979, the Science Resource Office presented a Seminar on the "Problems of the Elderly" for the Joint Committee on Human Services and Elderly Affairs. The Office invited five guests to speak on different problems of the elderly. Dr. Knight Steel, Director of the Gerontology Center at Boston University, played a major role in organizing this seminar. Dr. Steel spoke on the "Health Problems of the Elderly;" Dr. Sandra Hoell of MIT dealt with "Housing and the Elderly;" Dr. Robert Binstock of Brandeis discussed "Social Policy Issues;" Dr. Elizabeth Matson of Boston University talked about "Institutionalization of the Elderly;" and Dr. Louis Lowy of Boston University spoke on "Social Programs for the Elderly."

Though open to the public, the seminar was intended for the members and staff of the Joint Committee on Human Services and Elderly Affairs. Limiting the audience to a fairly small number established a very informal atmosphere that led to an extremely productive discussion between the audience and the guests.

For January of 1980, the Science Resource Office scheduled three days of hearings on "The Potential Use of Coal" for the Joint Committee on Energy. Unlike the "Problems of the Elderly" seminar, these were official hearings based on a lengthy report to address specific areas of interest. The schedule allowed for six topics to be treated for one half day each. Experts from the area made themselves available for questioning by the Committee. The schedule indicates the extensive range of individuals who were willing to testify before the Committee. Beyond selecting and inviting the witnesses the Office prepared briefs for each member of the Committee, so that they could take full advantage of the witnesses. As mentioned earlier, these hearings had to be postponed at the last moment. By that time, all hearings for the next several months had been scheduled and no substitute time could be found mutually agreeable to all parties. We include these aborted hearings among the examples of the Conference and Seminar Service not only to show that best laid plans sometimes do need go awry, but also to demonstrate the kind of external assistance the Office is able to generate for the Legislature.

The SRO, together with the Boston College School of Management, offered a seminar on the question "Is a Unified State Chartered Thrift System Desirable in Massachusetts?" For the Joint Legislative Committee on Banks and Banking. The event took place at the Boston Federal Reserve Bank on May 8, 1980. In addition to legislators, about 125 members of the banking community attended. Senator John A. Brennan and Representative Antone S. Aguiar served as moderators. Senator Brennan has filed for the

1982 legislative session a major banking reform bill that reflects at least in part what was learned from the presentations and discussions.

On March 11, 1981, the Office hosted a "Conference on Productivity and and Reindustrialization." This day-long conference was sponsored by the Joint Committees on Banks and Banking, Commerce and Labor, and Taxation. It was designed to raise as many issues as possible within one day. Not only did these Committees invite all members and staffs, but also many individuals from academia, business, and government. The purpose of this conference was to begin a dialogue between government, business, labor, and consumers on how to improve productivity. As the attached schedule indicates, a broad range of speakers and topics were presented.

The Conference was an unqualified success and generated an appreciation for the complexity of the issue and an enthusiasm for dealing with this problem. Dr. Lestor Thurow lived up to his star billing as a brilliant and articulate educator. The other speakers, without exception, were excellent at expanding on the many controversial points which Dr. Thurow raised. The strong support of the Committee Chairmen and the participation of the House Speaker and Senate President, particularly, contributed to the success of the program.

Most of the formal seminars and conferences were organized with the assistance of the NSF grant funds. Clearly, the grant made possible these efforts to demonstrate to legislators the ability of this Office to organize quality programs.

TECHNICAL STUDIES

The Technical Studies Service produces studies of 50 pages or more which analyze in detail major public policy issues. These studies provide legislators and their staff with an introduction to complex areas of policy and can act as a guide for policy formulation and legislative drafting, provide perspective during debates and hearings, or assist committees responsible for study packages.

To produce quality studies of sufficient depth and scope, the Technical Studies Service relies on members of the scientific and technical community to write, or supervise the writing of, the studies. The Service also makes the authors available after the studies are issued to brief legislators, suggest witnesses for hearings, or assist in arranging seminars or conferences. To produce the reports and subsequent work,the Technical Studies Service requires that the office commit a substantial portion of its resources in the form of staff time, secretarial assistance and nominal remunerations. As a consequence, the Service is generally available only after the House and Senate Chairmen of Joint Committees recommend that the Service undertake a study.

In 1977, the Technical Studies Service issued a model study analyzing Laetrile Cancer Therapy. After the Joint Committee on Health Care held hearings on several bills proposing regulation of Laetrile therapy, the House and Senate Chairmen requested a technical study evaluating the merits of this new and controversial therapy.

At the time of the request, the office was fortunate to have in its employ Dr. Richard Bolt during his six-month tenure as a Visting Scientist. The Office had selected Dr. Bolt, the co-founder of the Cambridge based and internationally recognized consulting firm Bolt, Beranek & Newman, for his vast experience in science research and science policy. Dr. Bolt assumed responsibility for the report and had extensive consultations with a number of prominent scientists to acquire the information for the report. He then supervised the SRO staff members who wrote the report.

Though the report received wide acclaim, the Office recognized that the process by which it had been written was due in great part to the position which Dr. Bolt holds in the scientific community and the the unique circumstances of his tenure as Visiting Scientist.

In 1978, the Office applied for and received an NSF State Science, Engineering, and Technology grant to develop a more stable arrangement for the Technical Studies Service. The Office hired Dr. Jeremiah Murphy of the Energy Resource Group, Inc. to direct the grant. A copy of the history of the SSET grant funded project is available by request.

In brief, Dr. Murphy used the grant to demonstrate the merits of hiring graduate students to write studies under the supervision of the SRO staff. The House and Senate Chairmen of the Joint Committee on Energy requested a study of the potential use of coal in Massachusetts.

Dr. Murphy asked the Director of the Harvard University Center for Energy and Environmental Policy to recommend several students for the project. The Office chose two graduate students, and one senior undergraduate who had significant consulting experience and graduate level work in industrial energy policy.

Under the direction of the SRO, the students produced a 159 page report, which explained in lay terms the many potential uses of coal and suggested means of analyzing their costs and benefits. Because the report is a primer, touching on so many areas, the Chairmen and Office decided to schedule three days of hearings to address some of these issues in more depth. The authors had developed an extensive list of sources during their investigation and were able to suggest many experts from the Boston area. A copy of the schedule of the hearings is attached. All of the witnesses were very enthusiastic about, and supportive of, the format. Unfortunately, a sudden change in the political calendar required postponement, attempted rescheduling, and ultimately cancellation of the hearings.

Nonetheless, the SSET grant experiment showed that graduate students could produce credible technical studies and help arrange hearings or seminar programs. After the grant expired, our attention turned from the Technical Studies Service to the other services, in particular the Inquiry/Response Service. One reason for this is that Technical Studies require extensive supervision. Now this supervision can be reduced if funds are available to attract students who are superbly qualified and professional in their attitudes. The grant enabled us to attract such students.

In 1980, the House and Senate Chairmen of the Joint Committee on Post Audit and Oversight requested the Technical Studies Service to determine the extent to which State Health Insurance Plans satisfied its members. The Service used a portion of the office budget to fund a report entitled "A Survey of Workers Satisfaction with State Health Insurance Plans".

We had hoped to receive SSET implementation funds to improve the Technical Studies Service. In light of the status of such grants, we are exploring a process which might, in part, substitute for such funds. Instead of hiring graduate students, or others, to study specific topics by specific deadlines, we would instead suggest topics to classes of graduate students who in the normal course of their degree requirements must write papers. Over a period of time, the Office would hope to obtain a number of papers addressing specific legislative issues. We believe this would provide students and their advisors with an opportunity to turn their attention and interest, which is often focused on national and international issues, to matters of state policies.

ECONOMIC MODELING

During the past decade computer models of the national economy have become valuable tools in the development of national economic policies. Massachusetts is fortunate to be one of the few states for which a computer model of the state economy has been developed. Under the direction of Dr. George Treyz, the Department of Economics of the University of Massachusetts (Amherst) has created the Massachusetts Economic Policy Analysis (MEPA) project to develop a state economic model.

The model uses hundreds of equations to simulate the relationships between such variables as unemployment rates, inflation, tax revenues, state spending, and employment rates. Based on current data, the model can forecast the likely state of the economy for the next two decades. MEPA provides quarterly updates of these forecasts. The model can also use hypothetical figures, representing the direct effects of a legislative proposal to forecast the likely economic effects of the proposal.

Prior to 1977, the Senate Ways and Means Committee was the only office in the legislature to use the MEPA model. In 1977, the chairmen of the Senate Ways and Means Committee suggested the Science Resource Office assume responsibility for working with the MEPA model and make it accessible to all legislators.

The Office disseminates the quarterly reports to any legislator or staff interested in receiving them and assists legislators who wish to have MEPA assess the likely economic effects of proposals. In 1980 MEPA analyzed the potential effects of eight proposals, including:

MEPA assess the likely economic effects of proposals. In 1980 MEPA analyzed the potential effects of eight proposals, including:

1. What will be the impact on Massachusetts industry of establishing sufficient hazardous waste disposal capacity in-state to accommodate the quantity of hazardous waste currently being generated?
2. What would be the long term effects on the Massachusetts economy and state tax revenues if redeemable vouchers for low cost infiltration conservation measures were issued to home owners within the state?
3. What would be the effect on the Massachusetts economy of the decrease in property tax rates required by Proposition 2 1/2, assuming local governments cannot increase their revenues from other sources?

The Appendix contains Model #41 as an example of the projections which MEPA produces. It should be noted that econometric modeling is a relatively new development. The model, though quite complex and sophisticated, cannot project events ten or twenty years from now with complete accuracy. However, the model graphically illustrates the trends and relationships of various characteristics of the economy which a particular bill may cause.

In the past, the Science Resource Office has relied on the MEPA project staff to produce the computer simulations. Because of demands on the MEPA staff from other users, legislative requests cannot always be processed immediately, though the MEPA staff has been extremely attentive

to the Legislature's timetable. To improve this service, the MEPA project will permit our office direct access to the model. Early in 1982 a member of our staff will be available to produce MEPA simulations and a member of the MEPA staff will be available for consultations.

POLITECH

For the past few years, the Massachusetts State Legislature has been a very active participant in an experiment with the national information-sharing computer communications system POLITECH. The system acts as a nation-wide electronic bulletin board which the participants can use to post questions, responses to questions, or messages. POLITECH participants include state legislatures, federal agencies, information clearinghouses, professional societies and others who, by using POLITECH to share information, can reduce the repetition of research which otherwise occurs as the participants address similiar issues.

Each participant uses a computer terminal to enter at any time the POLITECH system, and to post in the memory such questions as:

- "How do other states statutorily define groundwater?"
- "What are the methods of testing shellfish for ozone content?"
- "What are the costs of testing soils contaminated by ozone and PCB?"

Any user can, at any time, use a terminal to read the questions from the memory and to post responses to any question. Responses may include a few paragraphs which directly answer the question, a list of contacts in the state or country, a message that material is being sent out, a citation to statutes or regulations, or any other useful information. As each question elicits responses the system becomes a library of questions and answers available to all users.

Massachusetts believed that this system could develop into a very productive tool; and, as Table III indicates, Massachusetts was a very active participant. The Science Resource Office and the Massachusetts Legislative Service Bureau jointly operated POLITECH. The table includes data from both offices:

TABLE III

YEAR	MASSACHUSETTS QUESTIONS ANSWERED	MASSACHUSETTS RESPONSE TO OTHER STATES
1979	2	38
1980	33	157
1981	24	18

In the spring of 1981, after five years of participation, the SRO and LSB evaluated POLITECH. Unfortunately, though one of the earliest and most ardent supporters, we were forced to recommend termination of our contract. This recommendation is based on three findings. First, POLITECH does not provide very much information. Massachusetts began its participation knowing that for the first few years the costs would exceed the benefits. We accepted this as necessary to encourage others to participate. However, with the exception of a few extremely active members, information exchange has remained minimal. Second, POLITECH operations are very time consuming. In an effort to take our commitment to POLITECH seriously, we assigned a permanent staff member to the system. He used the system frequently and became quite adept in its use. Nonetheless, he found that he spent an

inordinate amount of time simply trying to use the system. Mechanical and software problems with the system wasted too much time. Third, POLITECH was not as effective as other research tools. As the Inquiry/Response Service grew, great demands were placed on efficient research tools and staff time. Had staff viewed POLITECH as such a tool, its place in our office would have been more secure than ever. However, the sheer need to produce results quickly showed POLITECH to be a drain on staff time rather than a valuable addition to our services. As of August, 1981, Massachusetts has ended its participation in POLITECH.

EVALUATION AND FUTURE

The past three years have been both encouraging and sobering. We have found that Legislators value the assistance they have received and the scientific and technical community has been willing to provide that assistance. However, we have also found that legislative responsibilities are so vast, and the sources of information so disparate, that much is left to be done.

An office such as ours, trying to insinuate itself into an established and complex flow of information, cannot simply declare its existence and provide an organizational chart to prove it. It has to earn its reputation as a credible source of usable information. To make the kind of reputation necessary to change the habits of researchers, we had to develop relations that were lasting and standards that were high. For this reason we chose to skew our efforts toward developing the Inquiry/Response Service.

This Service has occasion to assist the greatest number of Legislators in a way that is both unique, easy to use, and most urgently needed. We can say with confidence that the Inquiry/Response Service has become an effective and significant service which assists the Legislature at every stage of the legislative process. More staff and Legislators use the service than ever before; more return to use the service than ever before, and those who use it express genuine satisfaction.

The need for the office is clear, and it is viewed by legislators and staff as a valued source of needed information. But the full potential of the office has yet to be realized. Quantitatively the office should be able

to handle close to 1000 requests annually. We believe that the present complement of staff, given sufficient experience, should be able to attain this goal. Research experience is essential for responding rapidly and for developing issue briefs of interest to many legislators.

But more important than the quantitative goal is the qualitative one. This is to provide access to more usable information in less time. As experience of the Office and staff grows, each project benefits from previous projects, from material already gathered, sources already identified, and formats already agreed upon.

The Technical Studies and Conference-Seminar services have been excellent on a case-by-case basis, with the Technical Studies and various seminar programs well received. However, they were not developed beyond the experimental level because of the heavy emphasis placed on the Inquiry-Response Service. The office intends to give more attention to developing these services in the coming year. Lacking the funds we had hoped to receive from the SSET implementation grants, the task will not be easy.

The Office has thus far been successful in soliciting assistance from a large number of individuals in the science and technology community. This success has been exciting. We ought now to strengthen our relationships with the institutions in which the individual scientists and technologists work, the colleges, universities and professional societies. More structured relationships with the institutions themselves might offer the Legislature opportunities for information which the individual scientist alone could not provide.

Through its Intergovernmental Science and Public Technology program, the National Science Foundation has encouraged and assisted states in developing science resource capacities that could best serve the needs of individual legislatures. In doing so, it has made a major contribution to the public good. As a result of NSF's enlightened efforts many states now have offices that provide legislators with accurate and needed information on the scientific and technical aspects of public policy issues. Massachusetts considers itself fortunate to be one of those states.

Appendix A

ASSIGNMENTS

The following is a sampling of the types of reports which the SRO prepares in response to an information request. These include:

a) an Issue Brief on Acid Rain;

b) a Memo on Alternative Financing For Utilities;

c) a Fifty-State Survey on Professional License Fees;

d) an Annotated Bibliography on Agent Orange.

Science Resource Office
Massachusetts General Court
Room 312 and Room 34
State House, Boston, Ma 02133
(617) 727-8836 or 727-7865

ACID RAIN

Inquiry:

What is acid rain? What are its effects? Its causes?

Background:

All rain is mildly acidic, but rain in some parts of the world, such as New England, is significantly more acidic than expected. Moreover, the level of acidity seems to have been increasing during the past few decades.

Scientists measure acidity with the pH scale. This scale ranges from pH 1.0 (pure acid) to pH 14.0 (pure alkaline). pH 7.0 represents the point where acids and alkalines are in balance. On the pH scale each unit represents a ten-fold difference. For example, pH 4.0 is ten times as acidic as pH 5.0 and 100 times as acidic as pH 6.0. Pure rainfall has a pH of 5.6 because of the natural presence of a weak carbonic acid. The term "acid rain" applies to any rain that has a pH of less than 5.6.

EXTENT OF ACID RAIN

Response:

A number of studies indicate that rain in New England is more acidic than pure rain. The Department of Energy maintained a monitoring station at Wood's Hole from July 1976 to June 1979. Data indicated that for this period the average pH was 4.25 (about 30 times more acidic than pure rain). Observations from Hubbard Brook Experimental Forest in New Hampshire showed the average pH measurement for the New England region to be 4.28, with some instances of pH levels at 2.1 - 3.0 during individual storms. (over 1000 times more acidic than pure rain). The pH for vinegar is 2.4.

Sulfur oxides and nitric oxides in the atmosphere combine with rain to form sulfuric acid and nitric acid. These acids are the significant acidic constituents of acid rain. Gene Likens, of Cornell University, has compared measurements of rain acidity made during the 1950's to those made during the 1970's. He has found that the acidity of the rain has been steadily increasing. Likens also found that during the 1950's only the Northeast was subject to mild acid rains. By the 1970's the acidity of New England rain had increased and the area receiving some degree of acid rain had extended southward and westward to include most of the area east of the Mississippi and several urban and industrial areas.

There is no dispute that acid rain exists and that it is more severe in New England than most other areas of the country. however, Likens' evidence that the acidity is rapidly increasing, and his conclusion that such an increase is unnatural, is disputed. Dr. Ralph Perhac of the Electrical Power Research Institute (EPRI) testified before the National Commission on Air Quality and contended that present data are too sparse for drawing definitive conclusions that rain in the east has become more acidic over the last few decades. A few isolated measurements constitute the basis for the claim that rainwater before 1950 was less acidic than now. He claims that there are not enough long-term continuous data to conclude that levels of acidity have changed significantly.

EFFECTS

The problems which acid rain might pose have only recently drawn attention and investigation. Nonetheless, preliminary evidence has persuaded many environmental scientists that acid rain may well be having widespread detrimental effects.

There are no direct effects to humans, for even in the severest cases the level of acidity is not enough to harm humans. Acid rain does not burn the skin. There is however, potential for indirect harm to humans. Acidified lake water can dissolve toxic metals from sediments, thus contaminating fish. uman consumption of these fish may be hazardous to health. Furthermore, acidic water can dissolve metals from pipes. In this way toxic metals may enter our drinking water.

Beyond these indirect effects, most scientists are concerned with the effect of acid rain on the environment and man-made objects. The degree to which an area is affected by acid rain is determined by the amount of acid precipitation received and by the area's buffering capacity. Buffering capacity is the ability to neutralize the acidity of the rainfall. Areas of sedimentary rock have a high buffering capacity, while those of igneous rock have little. Massachusetts, like the rest of the Northeast, has a base of igneous granite rock, and so its buffering capacity is limited, thus this region is particularly sensitive to acid rain. Continual exposure to acid rain can lead to the depletion and eventual breakdown of these buffer systems. Some scientists are concerned that as the capacity of a buffer system to consume acid is destroyed there can be catastrophic and sudden changes in soil and water pH, (Interim; Acid Precipitation in the United States).

The effects of acid rain in freshwater aquatic ecosystems are the most apparent. It is estimated that 50,000 lakes in the Adirondacks and Canada have been acidified to the point where the fish population has declined or been destroyed, (Environmental News, December, 1979). In the Adirondacks, 51% of the mountain lakes have a pH of less than 5.0, and 90% of these contain no fish (Environmental Effects of Increased Coal Utilization; EPA R&D Report, June, 1978). Studies indicate that from 1927 to 1937 only 4% of the lakes in the Adirondacks region had a pH of less than 5.0.

Mountain lakes and streams are most susceptible because of their low buffer capacity and frequency of precipitation. Dr. Cowling, of North Carolina State University, has warned that acid rain could threaten the entire population of fresh water fish. When the pH falls below 5.6, the reproduction capacity of adult fish and the survival ability of eggs and young fish decline and eventually fail, (Glass, Mounting Acid Rain, EPA Journal Reprint; July/August, 1979). Low pH similarly affects other aquatic organisms. Bacteria eventually become unable to decompose litter, reducing the nutrient cycling critical to the ecosystem. Below pH 5.0 the survival of even larger fish becomes endangered. Acid rain also dissolves out of lake bottoms such metals as aluminum, copper, lead, nickel and mercury. These heavy metals can contaminate both fish and water.

Though acid rain appears to pose a threat to fresh-water marine life, it has had no deleterious effects on the New England salt water fishing industry. Valentine Descamps, meteorologist of the New England regional office of the EPA, said that scientists have concluded that there are no adverse effects on this industry. Carbonates present in saltwater neutralize acid rain. There are no indications this situation will change.

Scientists believe acid rain can harm terrestial ecosystems. However, the forest ecosystem is highly complex, more so than the aquatic ecosystem, so an understanding of the acid rain's effects is limited. Acid rain is one of many environmental stresses affecting this system. Nevertheless, indications are that acid rain can damage foliage, corrode cuticular wax which is essential for the retention of moisture; decrease soil respiration; interfere with decomposition; leach nutrients from the soil; and leach toxic metals from the soil, (Lee & Weber, Study of the Effects of Acid Rain on Model Forest Ecosystems, 1976).

The effects of acid rain on agriculture vary. Soil respirations, rate of decomposition, and the leaching of nutrients and metals are affected by it. Farmers in the Northeast have been liming their fields for years and these alkaline compounds neutralize the acidity of the soil. So, farm soil is less vulnerable to the effects of acid rain than forests or lakes in the Northeast. In the midwest, pH levels of soils are naturally high. Moderate amounts of acid rainfall can neutralize the alkaline soil, thus improving the yield of such crops as soybeans, (Pollution Engineer, September, 1979). Rainfall acidity may affect the plant structure itself. Studies indicate that when pH falls below 3.0 leaf surfaces become spotted. This devalues such crops as lettuce, spinach, and chard, whose foliage is the valuable part (Glass et al, Effects of Acid Precipitation in North America, 1979).

Man-made materials are also susceptible to acid rain. Atmospheric sulfur dioxide and its derivatives, including sulfuric acid (a component of acid rain), can accelerate the corrosion rate of most ferrous and some non-ferrous metals; reduce the durability of exterior paints; corrode limestone, marble and concrete building material; deteriorate man-made textiles and fade textile dyes; and cause paper and leather products to lose strength. Scientists have cited nitric acid (the other principal component of acid rain) as capable of causing some of these effects as well (Environmental Effects of Increased Coal Utilization, EPA, June, 1978).

Comprehensive studies have not yet been performed and so it is difficult to evaluate the relationshp between environmental degradation and acid rains. Nonetheless, many environmental scientists concur with the EPA Administrator Douglas Costle in his belief that destruction caused by acid rains is severe, In particular, many investigations are concerned that conclusive proof of damage will not be discernible before such damage is irreversible.

Causes

Scientists believe that acid rain is produced when nitrogen oxides and sulfur oxides combine with water, in a chemical reaction induced by sunlight, to form nitric acid and sulfuric acid. In New England, 30-40% of the acidity in rain is nitric acid and 60-70% is sulfuric acid. It is believed that the main source of nitrogen oxides are automobiles; fossil-fuel burning industries also account for emissions of nitrogen oxides. According to the New England regional EPA office, in 1977 26% of the nitrate emissions originating in New England (excluding Connecticut) come from electrical generation. The main sources of sulfur dioxides are power plants, steel mills, smelters and other fossil fuel burning industries. In 1977, the EPA reports, 47% of the sulfate emissions originating in New England (excluding Connecticut) came from electrical generation. A joint study by U.S. and Canadian scientists on acid rain shows that less than 25% of the sulfur pollution falling in New England comes from within the region. The major source regions for sulfuric acid in the United States are the Ohio and Tennessese Valleys, the north-central industrialized areas, and the Northeast urbanized area.

Scientists believe that tall smokestacks and general air patterns facilitate the transport of pollutants from these areas to New England. Most of the sulfate sources release their emissions through tall smokestacks. An emphasis on tall smokestacks came about in the early 1970's in response to growing concern over urban pollution: local pollution standards became tighter, and to meet these, industries built taller smokestacks to disperse their emissions farther away from urban areas. Urban pollution has declined, but the tall smokestacks carry sulfur and nitrogen oxides higher into the atmosphere. General air patterns then transport these pollutants hundreds of miles and deposit them in the form of either wet deposition (acid rain) or dry deposition. In instances of dry deposition, fly ash and gases settle to the ground. Acidification occurs when moisture comes in contact with this dry deposition.

The burning of coal is considered one source of the sulfur oxides which contribute to acid rain. An increased use of coal is expected as a means of increasing the consumption of oil. Douglas Costle, Administrator of the EPA, has recently said that simp;y converting oil burning facilities to coal burning facilities will create a severe increase in acid rains. Costle did indicate that coal conversion could proceed safely if steps were taken to reduce the emissions of sulfur. In particular, he suggested that the removal from operation of older plants and the use of coal cleaning techniques would be useful.

Dr. Perhac agrees that SO_2 and NO_x emissions from smokestacks can react with moisture to produce acids. But, he cautions, research does not prove this conclusively. He questions the degree to which man-made emissions induce acid rain. In order to assess the utility industry's contribution to acid rain, it must be known how acid rain is formed; enough is not yet known to make this assessment. Dr. Perhac also argues that before heavy industry in Ohio is named as the source of acid rain in New England, the relation between emissions at one place and pollutant concentration at another must be better understood.

There is agreement by all that more research is needed. To that end, the Federal government has formed a Federal Acid Rain Assessment Program by January 1, 1980, to be managed by a standing Acid Rain Coordination Committee with an annual budget of $10 million. The EPA has this year launched a new $900,000 research effort on acid rain.

Acid Rain Bibliography
on file at the SRO

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2. The Boston Globe; November 18 & 19, 1979, "The Insidious Killer Called Acid Rain" - first two installments of a three part series.

3. Cook, Robert Peter. "Effects of Acid Precipitation on Embryonic Mortality of Spotted Salamanders and Jefferson Salamanders in the Connecticut Valley of Massachusetts." - thesis for Master's degree submitted to UMass graduate school in May 1978.

4. EPA interagency Energy/Environmental R&D Program Report, June 1978. "Environmental Report of Increased Coal Utilization: Ecological Effects of Gaseous Emissions from Coal Combustion." - contains, but is not limited to, information on the environmental effects of acid rain.

5. EPA Research and Development, March 1979: "The Acid Precipitation Problem." - brochure addressed to the general public written in layman's terms.

6. EPA Environmental News, September 1979 - article explaining that the EPA is to increase acid rain studies.

7. EPA Office of Research and Development, October 1979, "Research Summary: Acid Rain."

8. EPA Environmental News, December 1979 - article.

9. Glass, Norman. EPA Interim Report: "Acid Precipitation in the United States; History, Extent, Sources, Programs."

10. Glass, Norman R. EPA Journal Reprint, July/August 1979: "Mounting Acid Rain."

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12. Glass, Norman R.; Likens, Gene E.; Dockinger, Leon S. "The Ecological Effects of Atmospheric Deposition" - prepared by EPA in October 1978.

13. Journal of the Air Pollution Control Association, October 1979, Volume 29 No. 10 "Carter's 2nd Environmental Message Asks New Initiative in Acid Rain Research."

14. Lee, Jeffrey J., and Weber, David E. "A Study of the Effects of Acid Rain on Model Forest Ecosystems" - prepared for the EPA in June 1976.

Science Resource Office
Massachusetts General Court
Room 312 and Room 527A
State House, Boston, Ma 02133
(617) 727-8836 or 727-7865

April 6, 1981

TO: Senator Chester Atkins - Steve Karnas

FROM: Science Resource Office, Carey Smith

RE: Ways In Which the State Can Assist Utilities In Raising Capital

Listed below are the names, affiliations and comments of people we have contacted regarding ways in which state government can make it easier for utilities to raise capital. A general comment expressed by many was that the regulatory climate of the state is a major factor in a utility's ability to raise capital.

1. Tom May
   Boston Edison Company
   800 Boylston Street
   Boston, MA
   (617) 424-2667

   Mr. May suggested favorable tax investment credit incentives and state guarentees of debt issues. For expenditures on items such as pollution control devices, the state could offer incentives through rate adjustments, which would allow utilities to recover capital more rapidly. Favorable state regulations such as an increase in the depreciation allowance would lead to an ability to attract capital more readily. Another progressive regulation would be a projected, or forecasted, test year. This would allow utilities to project expenses for the coming year, rather than using historical expenses of the last twelve months as they currently do when seeking rate relief. The historical test year is not accurate because of high interest rates and other factors. New York allows the use of a projected test year.

2. Jim Donnelly
   Boston Gas Company
   1 Beacon Street
   Boston, MA
   (617) 742-8400.

Mr. Donnelly said the best way to assist utilities is to provide an attractive regulatory climate. An example of this would be to permit the use of the projected test year mentioned above

3. Harold Bertolucci
Director of Utility Accounting
Massachusetts Department of Public Utilities
100 Cambridge Street
Boston, MA
(617) 727-3523

An example of state assistance currently in practice is that of Massachusetts issuing tax-free development bonds which are being used for anti-pollution devices by Boston Edison and Western Mass. Electric. A state finance agency could serve to assist utilities in raising capital by issuing state bonds and allowing utilities to borrow from them.

4. Mike Foley
National Association of Regulatory Utility Commissions
Washington, D.C.
(202) 628-7324

Possible state action includes the classification of any dividends from a utility company's stock as tax-free. Federal legislation is now being proposed which would benefit utilities. The subject of one such bill is dividends from the utility to shareholders. In this case, if the shareholder uses the dividends to buy stock, the dividends would be sheltered from tax rates until the stock is sold, at which time the dividends would be subjject to a capital gains tax, which is lower than income tax rates. This would only apply if the stocks purchased are newly issued and from the same utility. Another potentially helpful piece of legislation is Reagan's 10-5-3 tax plan. This calls for massive accelerated depreciations for, among others, utilities. This would particularly help utilities, for they are capital intensive, with more assets to write off from depreciation, and thus able to shelter more income from taxes.

5. Chip Stockford
Northeast Public Power Association
148 Linden Street
Wellesley, MA
(617) 237-9126

Municipalities can float municipal revenue bonds, which are then used by municipal utilities to purchase power supplies such as coal or oil. Mr. Stockford suggested allowing the use of these revenue bonds for other purposes, such as hydroelectric development.

6. Eric Leighton
New York Public Service Commission
Albany, New York
(518) 474-4508

Mr. Leighton has extensive knowledge in this field and pointed out that there are countless ways that a state can assist utilities. However, he suggested that a discussion of these ideas with someone who is familiar with how utilities raise capital would be more worthwhile.

7. Merrill Lynch
125 High Street
Boston, MA
(617) 357-1000

The local office suggested contacting the Utility Analyst at their New York City office (212-637-7455).

We realize that these ideas are not well developed but merely scratch the surface of utility financing alternatives. If you would like, we can pursue this matter more fully in an effort to obtain more specific proposals. To that end, we can contact one or more of the following groups:

1. Regulatory bodies, both federal and state
2. Out-of-state utility companies
3. Groups involved in venture capital and utility financing, such as major stockbrokers

In so doing, we hope to receive detailed ideas as well as answers to any questions you might have about the information above.

Science Resource Office
Massachusetts General Court
Room 312
State House, Boston, Ma 02133
(617) 722-1236

LICENSE FEES

Inquiry:

What are the fees other states charge to acquire licenses for the following professions: Dentistry; Embalming and Funeral Director; Engineer; Health Officer; Landscape Architect; Medicine; Nurses; Nursing Home Administrator; Optometry; and Physical Therapy.

Background:

In response to a legislative request, a forty-nine state mail survey was made by the Science Resource Office to collect information on professional license fees. Each of the forty-nine state agencies which are responsible for administrating their state's occupational licensing were asked to respond to a questionnaire. The questionnaire asked each agency to provide the initial or registration fee, exam fee, and re-exam fee for the following licenses: Dentistry; Embalming and Funeral Director; Engineer; Health Officer; Landscape Architect; Medicine; Nurses (R.N. and L.P.N.); Nursing Home Administrator; Optomery; and Physical Therapy. In addition to the occupational license fees, each state agency was also asked to indicate how these fees were used; whether the fees were used as a source of non-tax revenue, or for some other use.

The following study is the result of the responses our office received from the various state agencies which responded to the questionnaire. Due to the nature of a mail survey, especially the length of time it involves to answer a questionnaire and return it by mail, some states have not responded and therefore were not included in the study. Information which is collected after the printing of this study will be used in the future to further update the initial data of the survey.

Response:

Please see enclosed Tables.

DENTAL HYGENIST

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 20.00	$100.00	$ 75.00
California	20.00	24.00 (Biennial)	50.00
Colorado	64.00	13.00	
Delaware	10.00		25.00
Florida	40.00		50.00
Idaho	30.00		35.00
Illinois		30.00 (Annual)	25.00
Maryland	25.00	5.00	
Michigan	25.00	10.00	
Montana	15.00	10.00	60.00
New Jersey	20.00	5.00 (Annual)	20.00
New York	10.00		50.00
North Dakota			35.00
Oregon		1. 25.00 (Active) 2. 15.00 (Non Active)	140.00
Pennsylvania	10.00 (Biennial)		
Rhode Island	30.00	10.00	
Washington	50.00	20.00	

DENTIST

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 30.00	$200.00	$200.00
California	50.00	60.00 (Biennial)	100.00
Colorado	129.00	26.00	
Delaware[1]	20.00		75.00
Florida	1. 70.00 (Active) 2. 50.00 (Inactive)		150.00
Idaho	1. 80.00 (Active) 2. 50.00 (Inactive)		100.00
Illinois		30.00	50.00
Maine	50.00	50.00 (Biennial)	(National Exam Service)
Maryland	50.00	5.00	
Michigan	35.00	25.00	
Montana	20.00	25.00	60.00
New Jersey	50.00	1. 25.00 (Active) 2. 5.00 (Inactive)	
New York	40.00		100.00
North Dakota	75.00	50.00	25.00 (Re-Exam)
Oregon		1. 50.00 (Active) 2. 25.00 (Inactive)	190.00
Pennsylvania	25.00 (Biennial)		
Rhode Island	75.00	25.00 (Annual)	
Washington	100.00	30.00	

[1] Also requires a business license for private practice.

EMBALMERS

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 75.00	$ 50.00 (Biennial)	$ 25.00
California			
1. Embalmer	No Fee	50.00 (Annual)	50.00
2. Apprentice	21.10 (Annual)	No Fee	No Fee
Colorado	167.00	50.00	
Delaware[1]	20.00		75.00
Florida	1. 55.00 (Active) 2. 50.00 (Non Active)		50.00
Idaho		25.00	25.00
Illinois		6.00	30.00
Maryland		25.00	50.00
Michigan	10.00	25.00	11.00
Montana	15.00	50.00	50.00
New Jersey	25.00	25.00 (Annual)	50.00
North Dakota	Not to Exceed 100.00	Not to Exceed 50.00	75.00
Oregon	25.00	25.00	50.00
Rhode Island	50.00	10.00 (Annual)	
Washington	50.00	20.00	60.00

1. Also requires a business license for private practice.

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 50.00	$ 30.00 (2 yr. Pro-rated) 15.00 (After 11/1/81)	$ 50.00
California	60.00	18.00 (4 yrs)	20.00 (Optional Fundamentals Examination)
Colorado	12.00	5.00	17.00
Delaware[1]	24.00 (Biennial)		75.00
Florida	40.00		35.00
Idaho	80.00	24.00	66.00
Illinois		10.00	1. 30.00 Part I&Part 2. 15.00 Part III
Maine	10.00	12.00 (Biennial)	25.00
Maryland	20.00	10.00	
Michigan	40.00	25.00 (Annual)	30.00
Montana	40.00	40.00 (Biennial)	30.00
New Jersey	40.00	10.00 (Annual)	Included in Application Fee
New York	40.00		100.00
North Dakota	Not to exceed $50.00	50.00	
Oregon	50.00	13.00	25.00
Pennsylvania	50.00	10.00 (Biennial)	50.00
Washington	20.00	20.00	

1. Also requires a business licence for individuals who are in private practice.

FUNERAL DIRECTORS

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 75.00	$ 50.00 (Biennial)	$ 25.00
California	50.00	150.00 (Annual)	100.00
Delaware[1]	20.00		75.00
Florida	1. 75.00 (Active) 2. 50.00 (In Active)		50.00
Idaho		25.00	
Illinois		6.00	30.00
Maine	Included in Exam Fee	5.00 to 25.00	40.00
Maryland		25.00	50.00
Michigan	10.00	25.00	11.00
Oregon	25.00	25.00	50.00
Pennsylvania	25.00	20.00 (Biennial)	25.00
Rhode Island	50.00	20.00 (Annual)	
Washington	50.00	20.00	60.00

1. Also requires a business license for private practice.

LANDSCAPE ARCHITECT

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
California	$150.00	$150.00 (Biennial)	$125.00
Delaware[1]	50.00		50.00
Florida	100.00		150.00
Idaho		50.00	50.00
Maine	50.00 to 100.00 (Depends on Category)	50.00 (Annual)	Fee Included in Registration
Michigan	100.00	25.00	
Montana	75.00	90.00	100.00
New York	30.00		80.00
Pennsylvania	75.00 (Includes Exam Fee)	75.00 (Biennial)	
Oregon[2]			
Washington		35.00	100.00

1. Also requires a business licence for private practice.

2. Landscape architects are no longer licensed by the State of Oregon. Landscape contractors pay $15.00 for registration and $15.00 for renewal. Upon completion of an examination, the cost of a license is $25.00. Renewal of the license is based upon gross income and can range from $20.00 to $300.00

LICENSED PRACTICAL NURSE

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 30.00	$ 15.00	$ 30.00
California 1. Vocational Nurse	25.00	25.00 (Biennial)	25.00
2. Interim Permit	10.00		
Colorado	25.00	17.00	
Delaware	10.00		30.00
Florida	1. 22.00 (Active) 2. 12.00 (Inactive)		40.00
Idaho[1]		25.00 (Biennial)	1. 65.00 2. 15.00 (porary Licens
Illinois		10.00	15.00
Maryland	35.00	2.00	
Michigan	45.00	5.00	
Montana	35.00	10.00	35.00
New Jersey		5.00 (Annual)	25.00
New York	10.00		50.00
Oregon		15.00	35.00
Pennsylvania	18.00 (Includes Exam Fee)	5.00	
Rhode Island	25.00	5.00 (Annual)	
Utah		20.00 (Biennial)	40.00
Washington	50.00 (Includes Exam Fee)	10.00	

1. Subject to change July 1, 1981: endorsement fee $60.00; temporary license fee $10.00; and renewal fee $30.00.

NURSING HOME ADMINISTRATORS

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 50.00	$ 50.00	$ 25.00
California			
1. Nursing Home Administrators	50.00	100.00 (Biennial)	
2. Administrator in Training	75.00	100.00	
Colorado			
1. Nursing Home Administrators	127.00	63.00	
2. Administrator in Training	32.00		
Delaware	150.00		125.00
Florida	150.00		200.00
Idaho	40.00	40.00	100.00
Illinois		15.00	75.00
Maine	65.00	65.00 (Annual)	65.00
Maryland	50.00	50.00	
Michigan	50.00	50.00	
Montana	25.00	100.00	
North Dakota	Not to Exceed 50.00		
Oregon		100.00	100.00
Pennsylvania	50.00 (Includes Exam Fee)	50.00 (Biennial)	
Rhode Island	50.00	50.00 (Annual)	
Washington	125.00 (Includes Exam Fee)	35.00	

OPTOMETRISTS

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$100.00	$200.00 (Four years)	$ 50.00
California	No Fee	13.00 (Annual)	46.10
Delaware[1]	30.00		75.00
Florida	1. 130.00 (Active) 2. 2.00 (Inactive)		100.00
Idaho[2]		50.00	25.00
Illinois		60.00	50.00
Maine	First Year is Included in Exam	50.00 (Annual)	75.00
Maryland	75.00	40.00	
Michigan	100.00 (Includes Exam)	25.00	
Montana	25.00	50.00	
New Jersey	25.00	1. 25.00 (Active) 2. 17.50 (Inactive)	150.00
New York	40.00		100.00
North Dakota	25.00		40.00
Oregon		1. 85.00 (Residents) 2. 45.00 (Non-Residents)	50.00
Pennsylvania		25.00 (Biennial)	25.00
Rhode Island	40.00	25.00 (Annual)	
Washington	35.00	35.00	50.00

1. Also requires a business license for private practice.

2. Subject to change July 1, 1981: Examination Fee $100.00

PHYSICAL THERAPY

ATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
aska	$100.00	$200.00	$100.00
lifornia	20.00	20.00 (Biennial)	41.15
lorado	64.00	12.00	
laware[1]	20.00		75.00
orida	20.00		75.00
aho	50.00	35.00	20.00
linois		15.00	35.00
ine	First Year is Included in Exam.	20.00 (Biennial)	50.00
ryland	50.00	15.00	
chigan	50.00	25.00	
ntana	100.00	25.00	
w Jersey	100.00	10.00 (Annual)	50.00
w York	30.00		80.00
rth Dakota		Not to Exceed 25.00	Not to Exceed 75.00
egon		30.00	60.00
nnsylvania	1. 50.00 (New Application) 2. 15.00 (Re-Application)	25.00 (Biennial)	
ode Island	50.00	5.00 (Annual)	
shington	50.00	20.00	

[1] Also requires a business license for private practice.

REGISTERED NURSE

STATE	REGISTRATION or INITIAL FEE	RENEWAL FEE	EXAM FEE
Alaska	$ 40.00	$ 15.00	$ 40.00
California	35.00	16.00 (Biennial)	35.00
Colorado	37.00	4.00	37.00
Delaware	10.00		30.00
Florida	1. 22.00 (Active) 2. 12.00 (Inactive)		
Idaho[1]		25.00 (Biennial)	1. 80.00 2. 5.00 (Temporary License)
Illinois		10.00	25.00
Maine	Included in Exam Fee	10.00 (Annual)	30.00 to 40.00
Maryland	50.00	2.00	
Michigan	45.00	5.00	
Montana	35.00	10.00	35.00
New Jersey		5.00 (Annual)	35.00
New York	10.00		50.00
Oregon		25.00	45.00
Pennsylvania	24.00 (Includes Exam Fee)	10.00 (Biennial)	
Rhode Island	30.00	5.00 (Annual)	
Utah		20.00	50.00
Washington	50.00	15.00	

1. Subject to change July 1, 1981: endorsement fee $60.00; temporary license fee $10.00; and renewal fee $30.00

STATE	NON-TAX REVENUE	OTHER	COMMENTS
Alaska	x		
California	x		California treats General and Special Funds--licenses and other fees--similarly for budget purposes.
Colorado		x	Colorado does not consider occupational license fees a source of Non-Tax Revenue. Under the Colorado concept of "Appropriated Cash Funding," fees must be adjusted annually to generate direct revenues sufficient to match the authorized and indirect costs of operating each Board.
Delaware	x		All of the income collected by the various examining boards is deposited in the General Fund of the State of Delaware.
Florida		x	Collected fees are mandated by law to be placed in the Department of Professional Regulation Trust Fund. Four percent (4%) of the collected revenues is paid to the State General Revenue Fund.
Idaho	x	x	1. Fees collected for landscape architect, mortician, nursing home administrator, and optometry licenses are considered to be a source of Non-Tax Revenue. 2. Fees collected for medical, physical therapist, dental, and nursing licenses are placed in a dedicated fund to be used only by that particular board.

STATE	NON-TAX REVENUE	OTHER	COMMENTS
Illinois	x		
Maryland	x		
Michigan	x		The balance of the funds--fees and taxes--collected by the Department of Licensing and Regulation are deposited in the General Fund.
Montana		x	Collected license fees are not General Fund Revenue. Montana considers license fees as non-tax revenue to be earmarked to serve a special purpose. These fees are a dedicated tax to be used for a specific purpose, in this case, for those individual engaged in the particular occupation or profession.
New Jersey		x	Regulatory Boards are fiscally dependent upon collected fees to defray expenses incurred by the Board or Commission.
North Dakota	x		
Oregon	x		
Pennsylvania	x		
Utah	x		(Nursing Fees)
Washington		x	

Science Resource Office
Massachusetts General Court
Room 312 and Room 34
State House, Boston, Ma 02133
(617) 727-8836 or 727-7865

INQUIRY:

What information does the SRO have concerning Agent Orange?

BACKGROUND:

Agent Orange is a chemical compound composed of equal portions of herbicides 2, 4-D and 2, 4, 5-T. These herbicides have been used extensively in U.S. agriculture and forest management for nearly 30 years. Agent Orange was used as a defoliant in South Vietnam by U.S. military forces in the late 1960's. Since 1977, the VA has been receiving complaints of ill health from Vietnam vets exposed to Agent Orange. Because of this concern, extensive studies have been conducted on exposure to Agent Orange.

AGENT ORANGE BIBLIOGRAPHY

1. "2, 4, 5-T and Human Birth Defects," June 1977. Source Unknown. Includes toxology study, epidemiology following 2, 4, 5-T use, and 2, 4, 5-T and neural tube defects. Concludes there is "no evidence to implicate 2, 4, 5-T as a causal factor in human birth defects."

2. Allen, J.R., Van Miller, J.P., "Health Implications of 2, 3, 7, 8, - Tetrachlorodibenzo-p-dioxin Exposure in Primates," 1978. A technical report concentrating on toxic effects of TCDD on humans and non-human primates.

3. American Forest Institute, "2, 4, 5-T In Forestry: A Summary of Current Issues and Facts Compiled by Ad Hoc Committee on Forest Chemicals," March 1977. A report on the agricultural uses of 2, 4, 5-T, its general risks, and effects on human health and the environment. It concludes that historic, scientific, and medical evidence show 2, 4, 5-T used in forest management is not hazardous and is essential for economic production of wood.

4. Council for Agricultural Science and Technology, "A Plague On Our Children," December, 1979. A report from CAST in response to PBS's NOVA program dealing with toxic chemicals, televised nationwide October 2, 1979. It consists of a critical commentary on the program content, with emphasis on 2, 4, 5-T and TCDD, and concludes the NOVA program "exacerbated the controversies which are largely based on misinformation."

5. Council for Agricultural Science and Technology, "Effects of Herbicides In Vietnam and Their Relation to Herbicide Use In the United States," August 1975. Reviews the military use of herbicides in South Vietnam, their effects on vegetation, soils, and South Vietnamese people. Concludes that safe and effective use of herbicides on agricultural, forest, and industrial United States lands has been proven, and the atypical military usage should have no bearing on continued use in the U.S. and the world.

6. Department of Pathology, University of Wisconsin Medical School, and Regional Primate Research Center, University of Wisconsin, "Hormonal Alterations in Female Rhesus Monkeys Fed a Diet Containing 2, 3, 7, 8-Tetrachlorodibenso-p-dioxin," 1979. A technically reported experiment addressing the effect of TCDD exposure on reproduction in nonhuman primates.

7. Environmental Health Sciences Center, Oregon State University, "A Scientific Critique of the EPA ALSEA II Study and Report," October 1979. An independent study conducted in response to a number of individual scientists and groups in the U.S. (and other countries) who challenged "ALSEA II" study and its conclusion.

8. Executive Office of the President, Office of Science and Technology, "A Report of the Panel on Herbicides of the President's Science Advisory Committee," March 1971. A technical review of the herbicide 2, 4, 5-T including details of its chemistry and purity, its domestic uses, its military significance as a defoliant, residue levels, toxicity, and general effects on the environment.

9. Moore, J.A., "Toxicity of 2, 3, 7, 8-Tetrachlorodibenzo-para-dioxin," 1978. A technical report discussing the toxic effects of TCDD in nonhuman primates.

10. Mullison, Wendell R., "Public Concerns About 2, 4, 5-T," April 1980. Discusses public concerns about 2, 4, 5-T and its trace contaminant TCDD, and maintains the herbicide is safe and efficient in controlling weeds and brush, and its use has not caused cancer, birth defects, or miscarriages.

11. Progress Report of the Interagency Work Group to Study the Possible Long-Term Health Effects of Phenoxy Herbicides and Contaminants, February 15, 1980. Includes interim membership of the work group, its research and other work plans, brief summaries of current research, as well as research being planned by federal agencies participating in the work group.

12. Report by the Comptroller General of the United States, "Health Effects Of Exposure To Herbicide Orange in South Vietnam Should Be Resolved," April 1979. Recommends the Department of Defense conduct a survey of any long-term medical effects on military personnel likely to have been exposed to herbicides.

13. Report by the Comptroller General of the United States, "U.S. Ground Troops In South Vietnam Were In Areas Sprayed With Herbicide Orange," November 1979. Issued by GAO suggesting congress direct an agency to determine whether a study should be conducted of health effects of Herbicide Orange on army ground troops in Vietnam between 1966 and 1969.

14. Robinson, B.D. (Registrar of Agricultural Chemicals), "Safety aspects of 2, 4, 5 -T herbicides." A report concluding that 2, 4, 5-T and another phenoxy herbicide 2, 4-D, are not hazardous and have served forestry and agriculture without proven danger for nearly 30 years.

15. Smith, Allen H., "Seasonal Analysis of Oregon Data on Spontaneous Abortions and 2, 4, 5-T Spraying," August 1979. A report from an epidemiological viewpoint of spontaneous abortion rates in Oregon in relation to forest 2, 4, 5-T spray, concluding that seasonal variation is not related to 2, 4, 5-T spraying.

16. USAF Occupational and Environmental Health Laboratory Aerospace Medical Division (AFSC), Brooks Air Force Base, Texas, "The Toxicology, Environmental Fate, and Human Risk of Herbicide Orange and its Associated Dioxin," October 1979. A technical report reviewing the use of phenoxy hervicides in Vietnam, their environmental fate, and pertinent human and animal studies.

17. U.S. Department of Defense, "Herbicide Orange Status Report." A general report identifying herbicide orange, its use in Vietnam and its possible ecological, environmental, and health effects.

18. U.S. EPA, Office of Toxic Substances. A memo dated November 15, 1979, sent to registrants of products containing 2, 4, 5-T and/or silvex, modifying the March 22, 1979 list of such products suspended by EPA.

19. U.S. GAO, Community and Economic Development Division. An August 16, 1978 report addressing "(1) the extent of the Department of Defense use of herbicides and other chemicals in Vietnam, (2) the number of military and civilian personnel exposed to these chemicals, and (3) the Department of Defense funded studies of the health effects of these chemicals."

20. U.S. Senate Committee on Veteran' Affairs. Statement by Joan S. Bernstein, General Council for HEW, February 21, 1980. Reviews the status of HEW and work groups studying the effects on humans of phenoxy herbicides and dioxins, and establishes guidelines for future research.

21. U.S. Senate Committee on Veterans' Affairs. Statement of Major General U.S. Augerson (Deputy Assistant Secretary of Defense), February 21, 1980. Reviews spraying techniques involving Herbicide Orange and concludes that DOD does not believe an extensive, retrospective epidemiological study will show causality between herbicide orange and ensuing ill health.

22. U.S. House Committee on Veterans' Affairs. Statement of Major General W.S. Augerson (Deputy Assistant Secretary of Defense), February 25, 1980. Same statement delivered before the Senate VA Committee on February 21, 1980 with additional information concerning herbicide related studies.

23. Veterans Administration, "Agent Orange and Vietnam Veterans," February 21, 1979. An Information Service report listing 20 typical questions received by the VA concerning Agent Orange.

24. World Health Organization (International Agency for Research on Cancer), "Long-term Hazards of Polychlorinated Dibenzodioxins and Polychlorinated Dibensofurans," Joint NIEHS/IARC Working Group Report, Lyon France, January 1978. Represents views and opinions of U.S. National Institute of Environmental Health Sciences/International Agency for Research on Cancer ad hoc Working Group. Reviews history of human exposure, collates current information, and forecasts needed new directions concerning these chemicals.

NEWSPAPER ARTICLES

1. Associated Press, "Traces of Chemical Are Founded In Men Exposed to Defoliant." The Washington Post, December 13, 1979.

2. Banks, Harold, "Cambridge gets Agent Orange center." Boston Herald American, January 16, 1980

3. Barry, Jan, "Viet Vet Survey Reveals Cancer, Defects." New Jersey Daily Record, April 1, 1979.

4. Davis, Donald, "Herbicides in Peace and War." Bio Science, February 1979.

5. DeWitt, Karen, "Officials Say No Proof Is Found Tying Herbicide to Veterans' Ills." New York Times, February 25, 1980

6. Ensign T. and Uhl M., "Blowing the Whistle on Agent Orange." The Progressive, June 1978.

7. Ensign T. and Uhl M., "Agent Orange: The effects remain long after the accidents are cleaned up." In These Times, July 19-25, 1978.

8. Ensign T. and Uhl M., "Dioxin poisoning spurs tests, protect." In These Times, August 15-21, 1979.

9. McLaughlin, John, "When Agent Orange hits home." New York Daily News, December 3, 1979.

10. Woollacott, Martin, "Poisonous legacy in Vietnam." Boston Globe, June 4, 1980.

Appendix B

INQUIRY/RESPONSE SERVICE

Below is a listing of all inquiries made to the SRO from January 1, 1981 to June 30, 1981. Of the 276 inquiries made, 63 came from Senators and their staff, 160 from Representatives and committee staff, and 53 from outside groups. This latter category includes the offices of the Governor and Lieutenant Governor, other state legislatures, the National Conference of State Legislatures, public interest groups, businesses and universities.

No.	DATE	TOPICS
1	1/5/81	Civil Service Reform to Increase Productivity
2	1/6/81	Information on Wisconsin Utility Board Structure, Enabling Legislation, Actions
3	1/7/81	Oil, Gas, Electricity Prices in Mass., Average Utility Bill
4	1/8/81	Coal Supply Available to Mass.
5	1/9/81	*Alternative Energy, Census, 1980 Mass. Cities and Towns
6	1/9/81	a) Loan HUD Fiscal Impact Guidebook b) HUD Reports on Condos in Low-Income Areas c) Alternative Energy, Wind System d) Information on Hydronics Conference
7	1/9/81	Information on Congregate Living
8	1/9/81	Vehicle Emissions Inspection/Maintenance Programs: A Survey
9	1/12/81	* Acid Rain, Drinking & Driving, Energy Laws Enacted in N.E., Generic Drug Laws, Policy Simulation #36, Policy Simulation # 37, Truth in Testing
10	1/12/81	Information on Pope's Visit

* denotes request for issue brief

No.	DATE	TOPIC
11	1/14/81	*Gasohol-Survey of Governmental Fleet Use Smoke Detectors-Radiation Threats Truth-in-testing
12	1/13/81	*TCE-Contamination: A Fifty State Survey
13	1/16/81	All Laws Involving County Government
14	1/16/81	Information re Mass. High Technology Council
15	1/19/81	* Cancer Registry, Windmills
16	1/19/81	Statistics on Milford Cancer Rate
17	1/19/81	*Thermal Pollution, Water Conservation, Water Shortage
18	1/19/81	*Darvon, Hospice, Living Wills, Respiratory Therapist, Thermal Pollution
19	1/20/81	Telephone Rates and Services, Worcester and Springfield; Business and Residential Telephone Usage, Worcester and Springfield;
20	1/21/81	* Agent Orange, Drinking & Driving GroundWater, Hospice, Living Wills, Mass. Solar Legislation, Public Drinking Water, Sludge, TCE Contamination, Water Shortage
21	1/23/81	* Acid Rain, Day Light Savings Time, Garbage to Energy
22	1/23/81	Windpower: General Utility Buy Back Provisions
23	1/23/81	Urea Formaldehyde Insulation
24	1/23/81	Health Hazards of Dye Used in Sausage Casings
25	1/26/81	Reports: Asbestos, 1976 Recombinant DNA and the Cambridge City Council, 1976

No.	DATE	TOPIC
26	1/29/81	*MEPA #18, DRI, January 1981
27	1/29/81	*MEPA January 1981 Quarterly Report
28	1/29/81	Urea Formaldehyde
29	1/29/81	Drinking & Driving
30	1/29/81	*Alternative Energy, Energy Con. (DOE), Flexitime. Gasohol , Living Wills, MEPA # 35, 36, 37, Mass. Solar Legislation
31	1/29/81	*Acid Rain, Boston Area Utility Stats, Energy Laws, (NERCOM), Garbage to Energy, Living Wills, Smoke Detectors, Thermal Pollution
32	2/3/81	*Drinking & Driving
33	2/3/81	*Child Abuse Stats, Child Abuse Programs, HMO
34	2/3/81	Mass. Revenue Analysis and Forecasting (MEPA)
35	2/3/81	*Agent Orange, Census 1980, Child Abuse Stats, Child Abuse Programs, Drinking & Driving, HMO
36	2/5/81	*Agent Orange, Cancer Registry
	2/4/81	Tax Increment Proposal (MEPA)
38	2/5/81	*Census 1980, Child Abuse Programs, Child Abuse Stats, Drinking & Driving, Gun Control, Living Wills, Water Shortage
39	2/5/81	*Acid Rain, Agent Orange, Alternative Energy Boston Utility Stats, Hospice, MEPA # 36, 37, Child Abuse 1 and 2, Sludge, Solar Legislation County & State, Truth In Testing

No.	DATE	TOPIC
40	2/5/81	Energy Conservation-Tax Credit Analysis
41	2/5/81	Water to Air Heat Pump Tax Credit Bill
42	2/4/81	Cogeneration
43	2/5/81	List of Addresses of Individuals on Energy Conservation Program
44	2/6/81	Disposition of People Convicted of Driving Under the Influence of Alcohol (50 States)
45	2/6/81	*Canadian Hydropower
46	2/6/81	Urea-Formaldehyde Foam Insulation
47	2/9/81	*Acid Rain, Agent Orange, Cancer Registry, Generic Drug Laws, HMO. Hospice, Living Wills, Smoking, Water Shortage
48	2/9/81	*Acid Rain, HMO, Child Abuse Programs, Generic Drugs
49	2/9/81	*Indoor Air Pollution
50	2/9/81	*Agent Orange, Alternative Energy, Banking, Cancer Registry, Child Abuse, Day Light Savings Time, Gun Control, HMO, Indoor Air Pollution, Ozone, Sludge, Smoke Detectors, TCE, Truth in Testing. Water Conservation
51	2/10/81	*Agent Orange Bib., # 17, 19, 22, and 23, All Legal Action Against U.S. re Agent Orange
52	2/10/81	*State and Federal Incentives, All Solar Legislation MEPA # 36, and 37
53	2/10/81	Mass. Solar Legislation
54	2/10/81	*Child Abuse Programs, Child Abuse Stats

No.	DATE	TOPIC
55	2/10/81	*Agent Orange
56	2/11/81	*Child Abuse Programs and Stats
57	2/10/81	Tax Incentives for Landlords Who Make Energy Conservation Improvements
58	2/11/81	Solar Siting Calculations
59	2/9/81	Minnesota Tax Revenue Data Base
60	2/11/81	*Mass Power Plants, Mass. Solar Legislation, Ozone, Smoke Detectors, Smoking, Solar Legislation, Solar Legislation State Act, Conservation Plans in Mass., Energy Conservation, Energy Laws, Garbage to Energy, Generic Drugs
61	2/11/81	Effects of Radiation on Infant Mortality Rate
62	2/11/81	*MEPA #36, 37
63	2/12/81	Proposed and Enacted Legislation for Nurse-Midwife
64	2/12/81	Effects of Prop 2 1/2
65	2/17/81	*MEPA Quarterly
66	2/17/81	*Agent Orange
67	2/17/81	*Energy Conservation, Flextime, Four-day Work Week, Ground Water, HMO, Indoor Air Pollution, Smoke Detectors, Solar Legislation
68	2/18/81	New England Electric Company Conservation Efforts
69	2/18/81	Roll Call: 1976 General Relief Rolls
70	2/19/81	Drinking Ages in States Contiguous to Mass. Information on Teen-age Drivers Going Into Contiguous States to Drink

No.	DATE	TOPIC
71	2/20/81	Criteria for Moratorium on Conversion from Oil to Gas
72	2/20/81	Information on Waltham and Newton Councils on aging
73	2/20/81	Juvenile Offenders: 50 states, Effectiveness, Reforms
74	2/20/81	Fuel Adjustment Clauses
75	2/23/81	Gun Control Regulations
76	2/23/81	*Agent Orange
77	2/23/81	*Smoking and the Work Place
78	2/24/81	Boston Population Census by Ward
79	2/24/81	Reciprocity of Hunting Licenses for HP and Eld., New England and New York
80	2/25/81	*Solar Legislation: Local, State; HMO
81	2/25/81	Key Legislative Issues 1965-1972
82	2/26/81	*Acid Rain, Agent Orange, Cancer Regulation Census 1980, Garbage to Energy, Ground Water, Hospice, Living Wills, MEPA # 37
83	2/26/81	Low Level Nuclear Waste Information
84	3/3/81	*Agent Orange, Alternative Energy, Conservation Plans, Darvon, Garbage, Gasohol, Generic Drugs, Ground Water, Indoor Pollution, Inn. Farming, Living Wills, Mass. Power Plant, Mass Solar

No.	DATE	TOPICS
85	3/4/81	*Agent Orange
86	3/4/81	Child Care
87	3/4/81	Graphic Artist
88	3/4/81	*All Issue Briefs
89	3/4/81	State Programs: Handicapped Workers
90	3/5/81	Warships as Prisons
91	3/5/81	Proportion of Local Budgets Spent on Schools
92	3/5/81	Fuel Adjustment Percentage of Utility Bill
93	3/5/81	*Living Wills
94	3/6/81	Christmas Tree Information
95	3/6/81	*Ground Water, MEPA, #36, 37, Public Drinking Water, Conservation, Water Shortage
96	3/9/81	Senior Citizens Working Off Taxes in Municipal Jobs
97	3/9/81	*Drinking & Driving
98	3/11/81	*Drinking and Driving: Mass. Update
99	3/12/81	Hazardous Waste-New England States
100	3/12/81	Reagan Budget Cuts Effect on New England
101	3/12/81	Co-Signer Legislation
102	3/12/81	*Acid Rain, Alternative Energy Legislation, Garbage to Energy, Hydropower Sites, MEPA #34, Sludge, Water Conservation, Water Shortage

NO.	DATE	TOPICS
103	3/12/81	Energy Audits: Other States
104	3/12/81	Outlook for Thrift Institutions in Mass. for 1980's
105	3/12/81	Information about Plastic Manufacturers
106	3/12/81	Excise Tax Loss Due to Prop 2 1/2
107	3/18/81	Banking Conference Transcripts
108	3/18/81	Helmet Law Repeals
109	3/18/81	*Acid Rain, Flexitime, Four-day Work Week, Passive Smoking
110	3/19/81	*Acid Rain, Effects of Raising the Drinking Age, Mass. Power Plants-Retirement Dates, Smoke Detectors . Unemployment in Rural Mass.
111	3/19/81	Duties and Powers of the legislature
112	3/19/81	*Banking - The Outlook for Thrift Institutions in Mass., Child Abuse Programs and Statistics, Unemployment in Rural Mass.
113	3/23/81	School and Local Tax Rates - 351 Cities and towns
114	3/23/81	Murder Rates in States and Countries with Strong Gun Control Laws
115	3/4/81	Professional License Information
116	3/24/81	Loss of State Taxes from H. 4493
117	3/21/81	Costs of Producing Charts by Mag. Card vs. Computer
118	3/25/81	Laws Regulating the Use of Propane Powered Cars

No.	DATE	TOPICS
119	3/26/81	Loss of Sales Tax Due to Tax Exemptions
120	3/25/81	Acquisition of Two Papers of Bindover in Mass.
121	3/26/81	Prisons Beds Per Capita in Mass., Budget Comparisons
122	3/26/81	Chapter 91.6 of California
123	3/26/81	Alternative Energy Statutes
124	3/27/81	Free Enterprise Zones
125	3/31/81	Information on Bills Altering Assessment for Elderly
126	3/30/81	Bond Rating of Malden, Melrose, and Medford, and Borrowing Record of Last Five Years.
127	3/30/81	Absolute Veterans Preferences in 50 States
128	3/31/81	Energy Conservation, Grades of Fuel Oil, Coal vs. Oil: Cost/Benefit Wood Burning
129	3/30/81	Information on Data Processing of Local Tax Data
130	4/1/81	Copies of Energy legislation
131	4/1/81	*TCE Contamination - A 50 State Survey
132	4/1/81	Alternatives for Cities with Tax Caps
133	4/2/81	The Pros and Cons of Nutramigen
134	4/6/81	Blue Laws in States Contiguous to Mass.
135	4/6/81	Update on Boston Census

No.	DATE	TOPICS
136	4/6/81	Information on the Race Relations Conference
137	4/6/81	Professional Societies
138	4/6/81	Hartford In-Kind Services: Payment Mechanism
139	4/6/81	PCB's
140	4/6/81	*Drinking and Driving, Generic Drug Laws, Gun Control Laws, Hospice, Living Wills
141	4/7/81	Housing by Race
142	4/7/81	*Rent Control
143	4/7/81	Revenue Sources for Industrial States
144	4/8/81	$300 Million in Local Aid Distributed by Lottery and Education Formula
145	4/6/81	Payment in Lieu of Property Taxes for Exempt Institutions
146	4/8/81	Information on Effects of Life-Line Utility Rates
147	4/9/81	*Alternative Energy Statutes and Incentives, Energy Laws Enacted in the New England States, Garbage to Energy, Hydropower, Solar Legislation in the States
148	4/9/81	*Agent Orange, School Tax Rates
149	4/9/81	*Corporate Day Care Centers
150	4/9/81	*Boston Area Utility Statistics, MEPA 36 and 37, Excise Taxes after Prop 2 1/2, School Tax Rates in Mass.

No.	DATE	TOPICS
151	4/10/81	*Boston Census Information
152	4/10/81	What is the Mass. Asbestos Commission?
153	4/10/81	Fuel Adjustment Charges Information
154	4/10/81	*Cancer Registries, Census 1980, Day CareCenters in Mass., MEPA # 34
155	4/10/81	Cancer Statistics
157	4/13/81	# of Utility Shutoffs per Season: Winter/ Summer Average Utility Bills
158	4/13/81	*Daylight Savings, Energy Laws, MEPA # 36 and 37, Sludge
159	4/13/81	*Information on MEPA
160	4/13/81	Information on Prop. 2 1/2 Alternatives
161	4/13/81	*MEPA # 34,36,37, Excise Taxes, School Taxes, Rural Unemployment, Water Shortages
162	4/15/81	List of Vendors, Time Allotments for Payment, Frequency of Payments and Balances Remaining
163	4/21/81	*Acid Rain
164	4/21/81	Annual Cost to State to Support a Child in a Foster Home v. in a State Institution, Compared to Other States' Costs.
165	4/21/81	Adult and Juvenile Alcoholism Rate in MA and Consumption on and off Premises
166	4/21/81	*Agent Orange Bibliography and Court Cases, Alternative Energy Statutes, Corporate Day Care Centers, Gasohol, Innovative Farming, Passive Smoking and and Smoking in the Work Place, TCE Contaminaton

No.	DATE	TOPICS
167	4/21/81	Information on the State Democratic Committee
168	4/23/81	Legal Analysis of Mass. Abortion Case
169	4/28/81	Information on State Programs to Create Jobs
170	4/29/81	Public Opinion on Environment Issues
171	4/29/81	*Mass Alternative Energy Statutes, Cancer Registries, Indoor Air Pollution
172	4/29/81	*Acid Rain, Altenative Energy Statutes, NERCOM Energy Laws, Garbage to Energy, Gasohol, Groundwater, Hydropower, Solar Legislation in Mass., Water Conservation and Shortages
173	4/29/81	Amount of Lead in Aerosol Spray Cans
174	4/29/81	Statistics on Elderly
175	4/30/81	*Boston Census Information
176	4/30/81	1979 and 1980 Unemployment Statistics for Mass. Cities and Towns
177	4/30/81	Number of Oil Retailers in Mass. and Total Sales of Retailers
178	4/30/81	Estimated Impact of Prop 2 1/2
179	5/1/81	Status of Bills; Real Estate Exemptions for Veterans
180	5/1/81	Higher Education Budget FY 81'-'82, UMASS
181	5/1/81	Higher Education Loan Program; Amount, Status and Cuts
182	5/1/81	Middlesex Jury System: Bills to Change Its Operation and Information

No.	DATE	TOPICS
183	5/1/81	Information on Casino Gambling
184	5/1/81	Volunteerism
185	5/4/81	Calculate Percentages of Prop 2 1/2 Statistics
186	5/4/81	*Hydropower
187	5/4/81	Information on Career in FBI and CIA; Does It Help to be a Serviceman?
188	5/4/81	Any Proposals for National Guard to Pay 100% of Part Time Student Tuiton
189	5/4/81	*Corporate Day Care, Garbage to Energy, MEPA Proposals # 36 and 37, School Taxes, Rural Unemployment
190	5/5/81	Auto Excise Tax Information
191	5/5/81	Nurse-Midwife Bibliography
192	5/5/81	Global 2000
193	5/5/81	*Acid Rain, Agent Orange Court Cases and Bibliography, Alternative Energy Statutes and Incentives, Cancer Registries, Child Abuse Programs and Statistics, Conservaton Plans, Day Care, Garbage to Energy, Generic Drug Laws, Groundwater, HMO, Hospices, Hydropower, Indoor Air Pollution, Mass Power Plants, Nurses-Midwives Bib., Passive Smoking, Smoking in Workplace, Water Shortages and Conservation

No.	DATE	TOPICS
194	5/5/81	*Alternative Energy Statutes and Incentives Drinking and Driving, Gun Control, Ozone, Professional Fees, Sludge, Smoke Detectors Smoking in the Workplace and Passive Smoking, Vehicle Emissions Inspection
195	5/5/81	Information on Gun Control Laws in Two States
196	5/581	*Agent Orange Court Cases and Bibliography, Living Wills, MEPA # 36, Ozone, Solar Legislation, School Taxes
197	5/5/81	List of Reports from LRB
198	5/6/81	*Acid Rain, Agent Orange Court Cases
199	5/6/82	Information on NCSL
200	5/16/82	*Banking, Cancer Registries, Child Abuse Statistics and Programs, Flexitime, Four-day Work Week, Professional Licenses, Taxes; In-kind Services
201	5/6/82	Civil Service Information
202	5/5/81.	Information on County Services
203	5/5/82	*Health Maintenance Organizations
204	5/5/82	*Acid Rain, Agent Orange Court Cases, Alternative Energy, Banking, Groundwater, Hydropower, Public Drinking Water Shortage
205	5/5/82	*Professional License Fees
206	5/5/81	*Banking, Hospice
207	5/5/81	*Hydropower, Taxes, Excise Taxes. School Taxes, Water Shortage
208	5/5/81	*Drinking and Driving, Hospice, Indoor Air Pollution

No.	DATE	TOPICS
209	5/5/81	*Drinking and Driving, Professional Licenses
210	5/5/81	*Acid Rain, Alternative Energy Statutes and Incentives, Census Information, Drinking and Driving, NERCOM:Energy Laws, Hydropower, Professional Licenses
211	5/5/81	*Daycare Centers, Living Wills
212	5/5/81	Divorce Laws in California
213	5/5/81	Federal and State Energy Aid
214	5/5/81	*Alternative Energy Incentives, Groundwater, Hydropower, Innovative Farming Techniques, Living Wills. MEPA # 36 and 37
215	5/5/81	*Flexitime, MEPA # 34, Newsletters, Truth in Testing
216	5/6/81	Leasing of Equipment to Cities and Towns
217	5/6/81	Dipel-Sevin
218	5/14/81	*Living Wills, Cancer Registries, General Program Laws, HMO, Hospice, Borrowed: US Health and Human Services Project Share, Nurses-Midwife
219	5/14/81	*Agent Orange
220	5/15/81	Mass. Advisory Council on Radiation, Professional Low-Level Radiation, Waste
221	5/15/81	NCSL Reagan Budget Analysis
222	5/6/81	Pamphlet on Older Americans
223	5/18/81	Mental Health Services in Mass.
224	5/6/81	Value of State-Owned Land if Taxed

No.	DATE	TOPICS
225	5/18/81	Use of Pilot Studies
226	5/19/81	Federal Statutes to Restrict DNA Research
227	5/19/81	Effects of House Budget on Selected Cities and Towns
228	5/19/81	Gypsy Moth Control
229	5/19/82	California Solar Gains Competition Loan
230	5/19/81	H. 3734 Amendments
231	5/19/81	Sprinkler and Smoke Detector Legislation
232	5/19/81	Security Deposit Interest Rates
233	5/20/81	Radioactive Waste Proposals, Legislation in Mass.
234	5/20/81	State Owned Land in Lieu of Taxes
235	5/21/81	Sunday Blue Laws
236	5/22/81	*MEPA Information
237	5/26/81	Information on Companies Which Treat Their Own Hazardous Waste
238	5/27/81	Recycled Oil
239	5/27/81	Minority Hiring for Medway Sewer Construction
240	5/27/81	MEPA April '77-'78
241	5/28/81	DRI March, April and May 1981
242	5/28/81	Asbestos Legislation in 50 States
243	5/29/81	Proposals for Increasing Annual Pension Checks
244	5/29/81	State Owned Land

No.	DATE	TOPICS
245	5/29/81	Agricultural Information
246	6/1/81	PerCapita Income: Selected Towns
247	6/1/81	*Agent Orange Court Cases and Bibliography, Smoke Detectors
248	5/22/81	Three Books from SRO Library
249	6/10/81	Information on Springfield Newspaper
250	6/11/81	*Census-Boston and National, Corporate Day Care, Drinking and Driving
251	6/11/81	*Alternative Energy Statutes, Cancer Registries, Flextime, Fourday Work Week,
252	6/12/81	State Funding of Science Resource Office
253	6/10/81	Mass. Residential Conservation Service
254	6/11/81	Asbestos - State laws
255	6/15/81	MEPA # 40
256	6/16/81	*Child Abuse, Programs and Statistics, Corporate Day Care, Generic Drug Laws, Truth-in-Testing
257	6/15/81	Job Opportunities in the Field of Hazardous Waste Disposal
258	6/15/81	Fuel Adjustment Clause - a Brief History Including when, why, who and kilowatt prices in 1978 and 1979
259	6/16/81	PURPA Legislation in N.E. and Industrial States, Copies of Legislation from States Not Waiting for PURPA Mandate, Instead Enacting Their Own Legislation
260	6/16/81	Copy of Mass. Taxpayer's Association "Green Book"

No.	DATE	TOPICS
261	6/16/81	Off-Track Betting
262	6/16/81	Mass. License Fees, Chart Form Including Fee, Department, Old and New Rate, # Outstanding, Est. or Actual Increase in Fiscal Revenue
263	6/19/81	Information on Low-Level Radioactive Waste, and Hazardous Waste
264	6/22/81	House and Senate Budget Figures on Aid Being Sent to Milford, Medway and Upton
265	6/23/81	General Laws Review: Private Ways
266	6/23/81	Sources of Contacts for the Bottle Bill
267	6/24/81	What States Have Ratified a Northeast Regional Energy Power Compact Bill?
268	6/24/81	Ideas for Talks on the Environmental Aspects of the City
269	6/24/81	How to File a Taxpayer's Lawsuit Against a Municipality on Any Issue
270	6/25/81	Information on Registries of Motor Vehicles in the Industrial States
271	6/25/81	Senate Budget Line Number for Alternative Care for Elderly
272	6/25/81	Veteran's Welfare Administration Costs
273	6/24/81	Vocational School Regulations
274	6/28/81	Copy of Siting Management Facilities, A. Fish
275	6/24/81	Veterans Agents-What do they Earn?
276	6/30/81	Food Coupon Regulations

Appendix C

CONFERENCE AND SEMINAR SERVICE

The conference and seminar service provides an opportunity for Legislators and their staff to meet directly with outside experts and discuss the complexities of specific issues. Relationships developed from such programs serve as a basis for further research and continued discussion between political leaders and others.

DATE	CONFERENCE	COMMITTEE
May 24, 1978	Pharmocology of Drugs Used in the Treatment of Mentally Ill	Joint Committee on Human Service and Elderly Affairs
June 13, 1978	Causes and Prevention of Mental Retardation	Joint Committee on Human Services and Elderly Affairs
January 12, 1979	Legislative Orientation Seminar	Legislators and their aides met with representatives from SRO, the Legislative Service Bureau, the State Library and the State Book Store
April 5, 1979	The Legislature Looks at Itself (public seminar)	Representatives from the business, banking and academic communities as well as from other interested citizen groups
May 21, 1979	Problems of the Elderly	Joint Committee on Human Services and Elderly Affair
May/June 1979	Massachusetts Economic Policy Analysis	Dr. Georg Treyz, Director of the Massachusetts Economic Policy Analysis Project (MEPA)
October 11 & 12 1979	Northeast Technical Conference	Hosted by Senate President William M. Bulger and Speaker Thomas W. McGee and funded by the National Science Foundation. Invited representatives from federal, state and local agencies as well as scientific and technological agencies.

DATE	CONFERENCE	COMMITTEE
November 1979	NCSL Conference on "Controlling Health Care Cost"	Joint Committee on Health Care
May 8, 1980	Is a Unified State Chartered Thrift System Desirable in Massachusetts? (see conference brochure below)	Sponsored by the Management Center, Boston College School of Management in conjunction with co-chairmen of Mass. Joint Legislative Committee on Banks and Banking
March 11, 1981	Conference on Productivity and Reindustrialization (see conference brochure below)	Co-chairmen of the Committee on Banks and Banking, Committee on Commerce and Labor, and the Committee on Taxation

Is a Unified State-Chartered Thrift System Desirable in Massachusetts?

Sponsored by

Management Center

Boston College

School of Management

This program is sponsored by the Management Center, School of Management, Boston College, in conjunction with Senator John A. Brennan and Representative Antone S. Aguiar, Jr., Co-chairmen of the Massachusetts Joint Legislative Committee on Banks and Banking

Programmatic assistance for this symposium is being provided by the Massachusetts Legislative Science Resource Office with funds from the National Science Foundation.

Date: May 8, 1980

Place: Auditorium
Federal Reserve Bank
600 Atlantic Avenue
Boston, Massachusetts

Welcome: Senator John A. Brennan
Co-Chairman of the
Massachusetts Joint
Legislative Committee on Banks and Banking

Moderator: Gail Y. Chu, Ph.D.
Assistant Professor of Finance
School of Management
Boston College

Participants: Robert E. Patrowicz, Executive Vice President
Credit Union League of Massachusetts, Inc.

Donald S. Galss, Executive Vice President,
Massachusetts Cooperative Bank League

Peter Morton, President and Chief Executive Officer
Federal Savings League of New England

Elliot Carr, President
Savings Bank Association of Massachusetts

Commentary: Gerald T. Mulligan, Commissioner of Banks,
Commonwealth of Massachusetts

Raymond H. Elliott, President
Federal Home Loan Bank of Boston

Closing Remarks: Representative Antone S. Aguiar, Jr.
Co-chairman of the Massachusetts
Joint Legislative Committee on Banks and Banking

TIMETABLE

1:45 — Registration
2:00 — Formal Program
4:00 — Reception

IV. 2:00
Changing Structure of Massachusetts Economy: Implications for the Future

Moderator:
Senator JOHN W. OLVER
Co-Chairman
Committee on Taxation

Panelists:
LEONARD RAPPING
Professor of Economics, UMass.
"Information, Computers and the Prospects for Economic Growth."

HELEN B. MUNZER
Department of Employment Security, "High Technology Employment in Perspective."

GEORGE TREYZ
Professor of Economics, UMass, "Future Cyclical Characteristics of the Massachusetts Economy: Possible Responses of State Government."

Discussion Leader:
Representative GERALD M. COHEN
Co-Chairman
Committee on Taxation

V. 3:30
Business Location Decisions and Plant Closings

Moderator:
Senator JOHN A. BRENNAN
Co-Chairman
Committee on Banks and Banking

Panelists:
JOHN S. HEKMAN
Department of Economics, Boston College,
"What Attracts Industry to New England."

ROBERT B. McKERSIE
Alfred P. Sloan School of Management, MIT,
"Minimizing the Impact of Plant Closings."

J. BRADLEY STROUP
Director Financial & Public Affairs, Data General Corp., "What Reindustrialization Means to High Technology Firms in Deciding Where to Locate or Expand."

Discussion Leader:
Representative ANTONE S. AGUIAR
Co-Chairman
Committee on Banks and Banking

VI. 5:15
Reception
14th Floor, Parker House
(Invited Participants Only)

CONFERENCE ON PRODUCTIVITY AND REINDUSTRIALIZATIC

March 11, 1981
Gardner Auditorium

Sponsored by the
Great and General Court
of
Massachusetts

State House, Boston

Conference Hosts

★

Senator JOHN A. BRENNAN
Representative ANTONE S. AGUIAR
Co Chairmen
Committee on Banks and Banking

Senator ROBERT D. WETMORE
Representative TIMOTHY A. BASSETT
Co-Chairmen
Committee on Commerce and Labor

Senator JOHN W. OLVER
Representative GERALD M. COHEN
Co-Chairmen
Committee on Taxation

★

Program arrangements by the Legislative Science Resource Office with funds from the National Science Foundation, and assisted by the University of Massachusetts.

CONFERENCE ON PRODUCTIVITY AND REINDUSTRIALIZATION

Date:
March 11, 1981

Place:
Gardner Auditorium
State House, Boston, MA

8:45 - 9:15
Registration

9:15 - 9:30
Welcoming Remarks
Speaker Thomas W. McGee

I. 9:30
The Falloff in National Productivity: The Need for Reindustrialization

Moderator:
Senator JOHN A. BRENNAN
Co Chairman
Committee on Banks and Banking

Panelists:
LESTER THUROW
Professor of Economics & Management, MIT, "Issues Involved in the Debate Over Productivity and Reindustrialization."

DAVID L. BIRCH
School of Architecture & Planning, MIT, "Role of Small Business in Reindustrialization Process."

MILTON D. STEWART
Small Business Administration, "The Productivity Debate as Viewed by Chief Advocate of the Small Business Administration."

Discussion Leader:
Representative ANTONE S. AGUIAR
Co Chairman
Committee on Banks and Banking

II. 10:45
The Regional Impact of a National Reindustrialization Policy

Moderator:
Senator ROBERT D. WETMORE
Co Chairman
Committee on Commerce and Labor

Panelists:
LYNN BROWNE
Federal Reserve Bank of Boston, "Realities of New England's Economic Situation in View of Reindustrialization."

JOHN F. KAIN
Urban Economist, City and Regional Planning, Harvard University, "What Reindustrialization Means to the Region's Cities."

BERNARD O'KEEFE
Chairman of the Board, EG&G, Inc., "The Need to Apply Technological Advances to Production."

Discussion Leader:
Representative TIMOTHY A. BASSETT
Co-Chairman
Committee on Commerce and Labor

III. 12:00
Luncheon (Keynote Speaker)
21st Floor, McCormack Building
(Invited Participants Only)

Introduction:
Senate President WILLIAM M. BULGER

THOMAS P. SALMON
Former Governor of Vermont, "The Winds of Change in Washington and the Reindustrialization Process."

Appendix D

TECHNICAL STUDIES

1975

Survey of Research on Energy Supply and Demand Projection for Mass.
Senate Ways and Means Committee.

1976

Recombinant DNA
Joint Committee on Health Care.

Restructuring of Electric Rates
Joint Committee on Government Regulations.

Health Effects of Inhaling Asbestos
Joint Committee on Health Care

1977

Health Effects of Auto Emission and Available Control Technology
Joint Committee on Transportation

An Oil Refinery in Fall River: Yes or No (20 min. Videotape)
Joint Committee on Energy and Legislative Service Bureau

Some Scientific Information about Laetrile and Cancer
Joint Committee on Health Care

1979

The Potential for Coal in Mass. Energy Future
Joint Committee on Energy

1980

A Summary of Workers'Satisfaction with State Health Insurance Plans
Joint Committee on Post Audit and Oversight

Appendix E

ECONOMIC MODELING

The following examples illustrate the type of information which the Massachusetts Economic Policy Analysis Project provides the Legislature. The issue brief lists the various legislative proposals which the project has analyzed from 1977 to 1981, while Policy Simulation Number 41 is an example of the kind of projections the project produces.

Science Resource Office
Massachusetts General Court
Room 312
State House, Boston, Ma 02133
(617) 722-1236

January 1981

INQUIRY:

What legislative proposals has the Massachusetts Economic Policy Analysis Project analyzed over the last four years?

BACKGROUND:

The Massachusetts Economic Policy Analysis (MEPA) Project of the University of Massachusetts provides the Legislature, through the Science Resource Office, with quarterly forecasts of the Massachusetts economy and with the capability of analyzing the economic effects of legislative proposals

RESPONSE:

Policy Simulation #	Date	Question
1	2/18/77	What effects would a program that directly increased investment in the Massachusetts electrical equipment industry by a net amount of fifteen million dollars per year have on the Massachusetts economy?
2	3/8/77	What effects would a program that directly increased fixed and inventory investment in thirteen manufacturing industries by a net amount of $150 million per year have on the Massachusetts Economy?
3	3/12/77	What effect would a reduction of the corporate profits tax have on the state economy and on the state budget?

Policy Simulation #	Date	Question
4	4/6/77	What effect would the elimination of the state manufacturing equipment tax credit of three percent have on the state economy and on the state budget?
5	4/6/77	What would be the effect on the Massachusetts economy of eliminating the Massachusetts three percent manufacturing equipment investment tax credit and reducing the corporate profits tax by enough to absorb the potential gain in state revenues from eliminating the credit?
6	4/26/77	What would be the effect on the Massachusetts economy of increasing state aid to localities by $40 million per year without any offsetting state tax increase?
7	4/26/77	What would be the effect on the Massachusetts economy of a tax package designed to increase state tax revenues and then to use these increased revenues for property tax reduction?
8	5/27/77	What would be the effect on the Massachusetts economy of the implementation of President Carter's energy program?
9	8/23/77	What would be the effect on the Massachusetts economy of instituting a Federal standard for workmen's compensation that increased the cost of workmen's compensation by .125 percent of the wage bill in Massachusetts and by .180 percent of the wage bill in the rest of the United States?
10	8/23/77	What would be the effect on the Massachusetts economy of a decrease in state government spending large enough to increase income-minus-spending by $30 million per year?
11	9/16/77	If the four major defense industries in Massachusetts experienced a ten percent increase in military prime contracts from the Department of Defense, what would be the long-term effects on employment, wages, personal income and the state budget?

Policy Simulation #	Date	Question
12	10/13/77	What would be the effect on the Massachusetts economy if the fuel cost of Massachusetts' Businesses were reduced by one percent?
13	11/14/77	What would be the effect on the Massachusetts economy of a Federal Job Corps center spending $3.2 million ('78 $'s) a year?
14	12/5/77	What would be the effect on the Massachusetts economy if the state minimum wage were increased from $2.10 to $2.65 and then kept equal to the Federal Minimum wage through 1981?
15	12/6/77	What would be the long run effect on the Massachusetts Economy of building a wood-gas fired electrical generation plant of 1,000 megawatts at Montegue instead of building one of the two proposed nuclear facilities if the generation price of electricity were the same in both cases?
16	2/16/78	What would be the economic impact upon tourism in Massachusetts of legalizing casino gambling at various locations within the state?
17	5/3/78	What would be the effect on the state economy of some of the alternatives to an increase of $200 million in Educational Aid to Local Governments?
18	5/1/78	What would be the effect on the Massachusetts economy of increasing the sales tax base and using the increased revenues for reducing other taxes?
19	5/22/78	What would be the long run effect on the Massachusetts economy if a large scale program were enacted providing loans for home solar water heating systems, assuming that a solar water heating system produces hot water at a price competitive with that of conventional water heaters?

Policy Simulation #	Date	Question
20	6/1/78	What would be the long-term effect on Massachusetts economy if a public corporation with public bonding authority were established to provide loans to homeowners installing additional insulation into existing homes within the state?
21	7/7/78	What effect do Welfare Aid for Dependent Children cost of living increases have on the state economy?
22	9/11/78	What would be the impact on the Massachusetts economy if 10,000 new jobs per year were created in the electrical equipment and instruments industries?
23	9/78	What would be the effect on the state economy of reducing corporate excises?
24	11/78	What would be the effect on the Massachusetts economy of reducing local property taxes?
25	9/78	What would be the effect on the Massachusetts economy of reducing the Personal Income Tax?
27	10/31/78	What effect would the defeat of Proposition 1, taxation by classification (thereby assuring taxation by 100% valuation), have on the Massachusetts economy?
28	12/78	What is the long-term impact on the Massachusetts economy of the first year of the Energy Conservation Analysis Project's first year in operation? What would be the impact if ECAP were expanded? What would the impact on the Massachusetts economy be if an alternative to the ECAP program were initiated?
29	1/79	What would be the effect on the Massachusetts economy of property taxation based on full valuation effective in fiscal 1980 with a \$25,000 R_1 through R_3 exemption?

Policy Simulation #	Date	Question
30	2/79	What would be the effect on the Massachusetts economy of, effective in Fiscal 1980, property taxation based upon full valuation for all sectors except R_1 through R_3, which are to be assessed at 35%?
31	5/79	What would be the effect on the Massachusetts economy of a mandatory beverage container deposit, effective in Fiscal 1982?
32		What would be the effect on the Massachusetts economy of property taxation based on classification with a $5,000 residential exemption
33	12/79	What would be the impact on the Massachusetts economy of a loss of 4,000 shipbuilding jobs?
34	6/80	What will be the impact on Massachusetts industry of establishing sufficient hazardous waste disposal capacity in-state to accommodate the quantity of hazardous waste currently being generated?
35	6/80	What would be the long-term effect on the Massachusetts economy and state tax revenues if redeemable vouchers for low-cost infiltration conservation measures were issued to homeowners within the state?
36	9/80	What would be the effect on the Massachusetts economy of the decrease in property tax rates required by Proposition 2 1/2, assuming local governments cannot increase their revenues from other sources?
37	9/80	How would the Massachusetts economy react to the cut in property tax rates required by Proposition 2 1/2, if state aid to localities is increased by just enough to match the loss in property tax revenues, and is financed by increased state taxes?

Policy Simulation #	Date	Question
38	3/81	What would be the effect on the Massachusetts economy of 4,143 new manufacturing jobs?
39	3/81	What would be the effect on the Massachusetts economy if instate producers of farm goods were given a 5% preference option on state government contracts?
40	4/81	What would be the effect on the Massachusetts economy of six million dollars in state grants to certain home owners and landlords in Massachusetts for the purpose of residential weatherization?
41	4/81	What would be the effect on Massachusetts economy of a $250 million loan program for energy conservation home improvement to be funded by the proceeds of 5 year bonds issued by MHMFEA?

Other Reports Available

An Overview of the Massachusetts Economic Policy Analysis (MEPA) Model and Its Use from 1977 Through 1980, by George I. Treyz, Roy E. Williams, G. E. DuGuay, and Benjamin H. Stevens.

Endogenous Wage Determination: Its Significance for State Policy Analysis Models, by George I. Treyz, Gerry E. DuGuay.

Conjoining an Imput-Output Model and a Policy Analysis Model: A Case Study of the Regional Economic Effects of Expanding a Port Facility, by Benjamin H. Stevens, George I. Treyz, and James K. Kindahl.

The Employment Sector of a Regional Policy Simulation Model, by George I. Treyz, Ann F. Friedlaender, and Benjamin H. Stevens.

Copies of Policy Simulations and Reports are available from the Science Resource Office.

"$250,000,000 for Energy Conservation"

THE MASSACHUSETTS ECONOMIC POLICY ANALYSIS MODEL

POLICY SIMULATION NUMBER 41

April 24, 1981

INQUIRY:

What would be the effect on the Massachusetts economy of a $250 million loan program for energy conservation home improvement to be funded by the proceeds of 5 year bonds issued by MHMFEA?

ANSWERED BY:

Roy Williams, George Treyz, Economics Department, University of Massachusetts (tel. 413-545-0915) and Mary Hochman, Executive Department, Commonwealth of Massachusetts (617-727-7200)

BACKGROUND:

In order to test the effects of Sections 5 and 6 of a proposed Residential Conservation Finanacing Act through which banks would lend the proceeds of "E-CHIP" bond to certain low and moderate income homeowners (or their landlords) in amounts of $35, $50, $55, $55, $55 million per year, we assumed for the five years starting Fiscal 1983 that:

(1) Each unit gets the maximum loan of $3000.

(2) Each loan will result in savings of 328 gallons of oil per year.

(3) Price of fuel oil follows DRI's March 1981 forecast.

(4) Loans will be repaid at 12% interest over 5 years (Total repayment $4000 per unit).

(5) Each million dollars of new spending results in 5 to 7 new jobs in trade and 4 to 5 new jobs in construction for one year, depending on the year, of the spending.

RESULTS:

The results of this simulation are on the attached table. Positive employment effects are shown because some of the fuel savings find their way back into the Massachusetts spending stream. The employment gains in this simulation are not as great per dollar of the program as they were in simulation Number 40 ("6,000,000 for Weatherization") because the fuel savings per dollar are lower for the more expensive conservation home improvements.

REFERENCES:

See attached Table.

n/03/20.

THE EFFECT OF A $250 MILLION E-CHIP LOAN PROGRAM

SUMMARY REPORT
MASSACHUSETTS ECONOMIC POLICY ANALYSIS MODEL

	Fiscal 1983	Fiscal 1984	Fiscal 1985	Fiscal 1986	Fiscal 1987	Fiscal 1988	Fiscal 1989	Fiscal 1990
Employment--Nonag. W. & S.*	.699	.915	.959	.971	1.047	.529	.826	1.127
Manufacturing*	.032	.043	.049	.058	.072	.068	.093	.113
Non-Manufacturing*	.667	.872	.910	.913	.975	.460	.733	1.014
Unemployment Rate (in percentage points)	-.013	-.014	-.014	-.014	-.015	-.005	-.013	-.017
Wage Index **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Boston C.P.I. **	.000	.000	-.000	-.001	-.001	-.001	-.001	-.001
Personal Income ***	8.979	13.528	15.726	17.480	20.507	12.574	19.056	27.789
Disposable Income ***	4.373	5.693	7.378	11.929	21.191	31.943	59.116	90.431
Real Per Cap. Disp. Inc. **	.003	.002	.004	.008	.016	.027	.046	.063
Rel. Business Cost **	-.000	-.001	-.002	-.002	-.002	-.002	-.002	-.002
Manufacturing **	-.000	-.001	-.002	-.002	-.002	-.002	-.001	-.001
Non-Manufacturing **	-.000	-.001	-.002	-.002	-.002	-.002	-.002	-.002
State Inc.-Minus-Spending***	.228	.297	.385	.623	1.107	1.668	3.088	4.723

*Difference in thousands of people.
(i.e. the Alternative minus the Control)
**Difference in per cent.
(i.e. 100*((Alternative-Control)/Control)
***Difference in millions of dollars.
(i.e. Alternative - Control)

Appendix F

POLITECH

POLITECH was the name of the overall information-exchange system, and it was composed of a number of different exchanges.

Legitech was a particular exchange conceived to handle any inquiries pertaining to state legislation which could be answered by research offices similar to the SRO, as well as by private associations and federal agencies.

Publitech, another exchange, actually started before Legitech and was at one time the only exchange in the system. In January 1980, all legislative offices moved onto the Legitech exchange, while all local governments remained on Publitech.

Appendix F contains a listing of Massachusetts responses to inquiries on the Legitech and Publitech exchanges, and a partial listing of responses to Massachusetts inquiries on the system.-

Massachusetts Responses to Inquiries
on the Legitech Exchange

January, 1980

14	Fuel Adjustment	Washington Legislature
22	Foreign Agriculture	Washington Legislature
26	Public Utilities	Pennsylvania Legislature
34	Solid Waste Management	Minnesota Legislature
38	Light Pollution	Minnesota Legislature

February, 1980

55	Energy Retrofit	New England Innovation Group
57	Auto Noise Pollution	New England Innovation Group
62	Alcohol Fuel Production	Minnesota Legislature
64	Handicapped Parking	Florida Legislature
65	Fire Code Standards	Florida Legislature

March, 1980

89	Genetic Drugs	National Technical Information Service
96	Natural Grass	Minnesota Legislature
101	Daylight Savings	Minnesota Legislature
114	Professional Licensing	Minnesota Legislature
124	Soil Contaminents	Minnesota Legislature
125	Soil Testing	Minnesota Legislature
127	Solar Retrofit	Minnesota Legislature
130	Energy Legislation	Minnesota Legislature

April, 1980

135	Coal to Methanol	Pennsylvania Legislature
143	Energy Conservation	Michigan Legislature

148	Motorcycle Mufflers	Minnesota Legislature
151	Emergency Aid Systems	Minnesota Legislature
152	Right to Die Laws	Minnesota Legislature
161	Clean Indoor Air Act	Minnesota Legislature

May, 1980

165	Creation Theory Legislation	Minnesota Legislature
167	Mega - Nutrient Therapy	Oklahoma Legislature
173	State Funded Energy Programs	New England Innovation Group

June, 1980

180	Midwife Birthing	Connecticut Legislature
194	Hazardous Waste Facilities	New England Innovation Group

September, 1980

226	Hazardous Waste Reporting Laws	Connecticut Legislature

October, 1980

227	Radioactive Waste Transportation	Michigan Legislature
228	Metric Education	Participation Systems, Inc.
231	Medical Service	Florida Legislature
236	Wind Powered Energy	Naval Underwater Systems Center
237	Groundwater Legislation	New England Innovation Group

November, 1980

245	Agricultural Extension	Florida Legislature
246	Beekeepers Program	Florida Legislature

December, 1980

249	Fire Extinguisher Law	Michigan Legislature

January, 1981

251	Hazardous Waste Sites	Naval Underwater Systems Center
257	Farmland Preservation	Florida Legislature

Massachusetts Responses to Inquiries
on the Publitech Exchange

October, 1979

7	Environment	Rhoda Epstein
14	Energy Conservation: Audits	Rhoda Epstein
16	Energy Education	" "
17	Energy: Employment	" "
19	Energy Production	" "
20	Energy: Economy	" "
21	Energy Conservation	" "
22	Energy Conservation	" "
24	Energy Conservation: Law	" "
26	Energy Conservation	" "
45	Neighborhood Food Production	" "
46	Neighborhood: Environment	" "
50	Energy: Space Heating	Minnesota Legislature
52	Biomass	Hawaii Dept. of Planning & Economic Development
57	Human Services: Energy	Pennsylvania Legislature
69	Community Energy Planning	" "
78	Heating Assistance	Deleware Legislature

November, 1979

80	Hazardous Waste	Minnesota Legislature
84	Infra-Red Energy Audit	" "

88	Competency Testing	Pennsylvania Legislature
89	Animal Disease	Oklahoma Legislature
93	Nuclear Waste Disposal	Participation Systems, Inc.

December, 1979

101	Four Day Work Week	
102	Formaldehyde	Minnesota Legislature
105	Sewer Pipes	Southwest Innovation Group
112	Energy Conservation	Southwest Innovation Group
114	Energy Compendiums	Southwest Innovation Group
117	Land Use Development Rights	Southwest Innovation Group
118	Beach Erosion	
122	Waste Brokerage	Office of Appropriate Technology
123	Plastic Waste	" " "
129	Troubled Youths	California Legislature
130	Utility Billing	John Niles
131	Nuclear Waste Disposal	Michigan Legislature
132	Storm Water Runoff	New England Innovation Group
135	Land Use Development	Montana Legislature
136	Fire Ladders	Office of Appropriate Technology
137	Waste Recycling	Indiana Legislature

January, 1980

142	Propane Gas	National Technical Information Service
143	Energy Conservation	
150	Vehicle Use	New England Innovation Group
152	Fire Fighting	Oklahoma Legislature

153	Kerosene Space Heaters	National Highway Traffic Safety Administration
157	Telephone Systems	Dave Culver
162	Methane	New England Innovation Group
163	Windmills	New England Innovation Group

February, 1980

169	Road Ice	New England Innovation Group
170	Noise Pollution	Kettering, Ohio
172	Steam in Cars	New England Innovation Group
174	Radon Gas	Kettering, Ohio
179	Sulfur Based Asphalt	Southwest Innovation Group
187	Water Conservation	Office of Appropriate Technology
188	Gasohol Legislation	Georgia Finnegan
189	Community Energy Plans	Univ. of Rochester

March, 1980

190	Road Base Stabilizers	New England Innovation Group
191	Revenue Forecasting	Southwest Innovation Group
193	Municipal Fleet Studies	Small World Exchange
195	Propane Use	Small World Exchange
199	Hazardous Waste	Naval Air Development Center
201	Motorcycle Strobe Lights	National Institute for Occupational Health and Safety
208	Methane in Cars	Small World Exchange
214	Seafood Waste Disposal	Naval Weapons Center

April, 1980

234	Use of Former Landfills	Southwest Innovation Group
235	Neighborhood Planning	Kettering, Ohio
236	Traffic Volume	New England Innovation Group
239	Four Day Work Week	Southwest Innovation Group
241	Refuse Collection	New England Innovation Group
242	Wind Power Sewer Pump	New England Innovation Group
246	Phase Liners	New England Innovation Group
250	Cable T.V.	New England Innovation Group

May, 1980

253	Floodplain Management	Texas Innovation Group
254	Revenue Source for Local Gov.	Univ. of Rochester
256	Computer Optics	New England Innovation Group
258	Air Pollution	Texas Innovation Group
259	Climate Modification	Harry Kemp
261	Solid Waste Density	Univ. of Rochester
264	Golf Cart Batteries	Public Technology Inc.
266	Returnable Bottles	Public Technology Inc.
271	Sod Production	Public Technology Inc.
277	Volunteer Fire Department	Public Technology Inc.
278	Sanitary Landfills	Public Technology Inc.

June, 1980

292	Natural Resource Inventory	Phoda Epstein
295	Computer Programs	Public Technology Inc.
298	Non-Herbicide Weed Control	Pacific Northwest Innovation Group

299	Sidewalk Repair's	Pacific Northwest Innovation Group
300	Tire Recycling	Pacific Northwest Innovation Group
302	Sludge Composting	New England Innovation Group
314	Traffic Stripping Equipment	Southwest Innovation Group

July, 1980

318	Landfill Fee Alternative	Small World Exchange
321	Leaf Pickup	Public Technology Inc.
325	Cable Data Transmission	New England Innovation Group
330	Electric Cars	Naval Air Development Center
332	Traffic Control Systems	Naval Air Development Center
333	Word Processing	Naval Air Development Center
335	Analysis Survey	Univ. of Rochester
340	Incineration Guidelines	New England Innovation Group
344	Gasohol Tests	Southwest Innovation Group
345	Hazardous Chemical Testing	Southwest Innovation Group

August, 1980

368	Ozone in Shellfish	New England Innovation Group
369	Solar Building Codes	New England Innovation Group
371	Oil Spills	New England Innovation Group
373	Home Heating Comparisons	New England Innovation Group
374	Hydroturbines	New England Innovation Group
381	Cable T.V.	Naval Underwater Systems Center
382	Health Effects of Infrasound	Naval Underwater Systems Center

September, 1980

386	Neighborhood Energy Plans	Kansas City Public Library
391	Cogeneration	Southwest Innovation Group
393	Acid Rain	Southwest Innovation Group
398	Agripost	New England Innovation Group
399	Nuclear Plant Zones	New England Innovation Group
416	Radar Accuracy	New England Innovation Group
417	Cogeneration	American Institute of Chemical Engineers
420	Enregy Allocations	American Institute of Chemical Engineers
421	Rushing Water Systems	Participation Systems, Inc.
423	Salt in Aquifers	New England Innovation Group

October, 1980

429	PVC Toxicity	New England Innovation Group
430	PVC Insulation	New England Innovation Group
440	Energy Equipment Leasing	New England Innovation Group
444	Gasohol Still	Southwest Innovation Group
451	Traffic Signals	Public Technology Inc.
453	Hazardous Waste	American Institute of Chemical Engineers
464	Leaf Pickup	Great Lakes Innovation Group
469	Electric Cars	New England Innovation Group
470	Refuse Collection	New England Innovation Group

Responses to Inquiries Made
by Massachusetts Legislators

Publitech Exchange: 5 inquiries answered by 15 respondents

October, 1979 - January 1980

Inquiry # and Title	# of Responses	Respondents
55 Solar Incentives	3	1. Oklahoma Legislature 2. Maine Legislature 3. National Bureau of Standards
79 Energy Conservation Through Water Control	2	1. National Bureau of Standards 2. New England Innovation Group
145 Section 504	2	1. New England Innovation Group 2. New England Innovation Group
146 Innovative Farming	6	1. New England Innovation Group 2. Carl Clark, National Highway Traffic Safety Administration 3. New England Innovation Group 4. National Institute for Occupational Safety & Health 5. Indiana Legislature 6. Minnesota Legislature
147 Low Energy Loans	2	1. Indiana Legislature 2. National Bureau of Standards

Legitech Exchange: 28 inquiries answered by 32 respondents

January, 1980

Inquiry # and Title	# of Responses	Respondent
28 Lobster Length	3	1. New England Innovation Group 2. Carl Clark, National Highway Traffic Safety Administration 3. Nevada Legislature
30 Energy Audits/Manager	4	1. Carl Clark, National Highway Traffic Safety Administration 2. National Bureau of Standards 3. Nevada Legislature 4. Nevada Legislature
31 Town & City Conservation Programs	5	1. National Bureau of Standards 2. National Bureau of Standards 3. Oklahoma Legislature 4. Carl Clark, National Highway Traffic Safety Administration 5. Nevada Legislature
32 Innovative Farming	1	1. Nevada Legislature

February, 1980

50 Handgun Legislation	3	1. New England Innovation Group 2. Oklahoma Legislature 3. Nevada Legislture
51 Sexual Misconduct	2	1. Nevada Legislature 2. Minnesota Legislature
63 Parole Board Statistics	2	1. New England Innovation Group 2. Nevada Legislature
66 Urban Affairs	5	1. New England Innovation Group 2. Oklahoma Legislature 3. Washington Legislture 4. Nevada Legislature 5. Minnesota Legislature

68 Vet Tax Abatement	3	1. New England Innovation Group 2. Oklahoma Legislature 3. Nevada Legislature
69 Foreign Studies	4	1. New England Innovation Group 2. Oklahoma Legislature 3. Washington Legislature 4. Nevada Legislature

March, 1980

74 Truth in Testing	3	1. Oklahoma Legislature 2. Nevada Legislature 3. Washington Legislature
88 Hawthorne Effect	2	1. Washington Legislature 2. Oklahoma Legislature
111 Heat Pump I	3	1. New England Innovation Group 2. National Bureau of Standards 3. Bruce Conlin, American Society of Mechanical Engineers
112 Heat Pumps II	2	1. New England Innovation Group 2. National Bureau of Standards
113 Senior Citizen Alternatives	2	1. Oklahoma Legislature 2. Nevada Legislature

May, 1980

170 Gasohol Fleet Studies	2	1. New England Innovation Group 2. National Bureau of Standards
174 Tetrachloroethylene	3	1. National Bureau of Standards 2. National Bureau of Standards 3. National Conference of State Legislatures

June, 1980

178	Tetrachloroethlene	3	1. National Bureau of Standards 2. New England Innovation Group 3. National Technical Information Service
179	Tetrachloroethylene	3	1. Florida Legislature 2. Florida Legislature 3. National Institute for Occupational Safety & Health

July-August, 1980

190	Telephone Rates	2	1. National Technical Information Service 2. Florida Legislature
206	Health Effects from High Voltage Transmission Lines	6	1. New England Innovation Group 2. National Bureau of Standards 3. National Institute for Occupational Safety & Health 4. National Bureau of Standards 5. Florida Legislature 6. Pennsylvania Legislature
209	Hazardous Gas Accidents	3	1. National Institute for Occupational Health & Safety 2. George Reinhart, National Technical Information Service 3. New England Innovation Group

210	Professional License Fees	2	1. Florida Legislature 2. National Technical Information Service
211	Funding for Non-Game Animals	3	1.Michigan Legislature 2.Michigan Legislature 3.National Technical Information Service
212	Solar Curriculum	5	1.National Institute for Occupational Health & Safety 2.Florida Legislature 3.New England Innovation Group 4.National Bureau of Standards 5.National Technical Information Service
214	Home Owner's Savings Plan	1	1.Pennsylvania Legislature
217	Spousal Rape	3	1.George Rheinhart, National Technical Information Service 2.New England Innovation Group 3.Florida Legislature
218	Motor Cycle Helmet Laws	2	1.Rhett Speer, MISTIC 2.Florida Legislature

Appendix G

NEWSLETTER

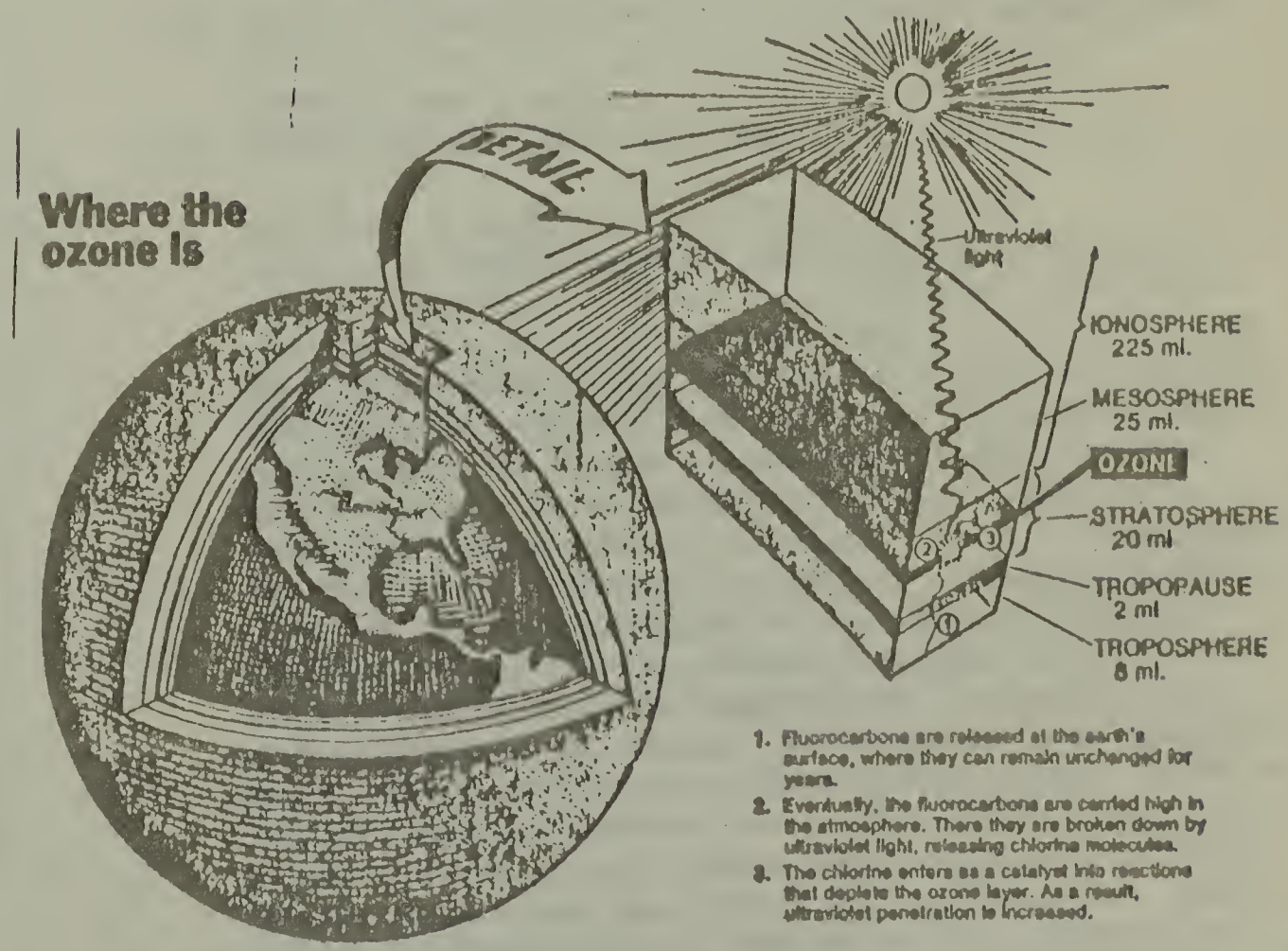
The Science Resource Office publishes a monthly newsletter, Resource, which includes a feature article, questions and answers, a calendar of events, an order form for memos and issue briefs, and a listing of SRO services.

A copy of Resource follows.

Resource

the monthly bulletin
of the Science Resource Office of the Massachusetts General Court

October 1980



Chlorofluorocarbons and the Ozone - See Q&A

Questions & Answers

Each month *Questions & Answers* will summarize a few SRO responses to legislative requests for information, indicating the range of research the SRO can provide for your office. For a copy of the complete responses to these requests, or to make a request of your own, please use the *Order Form* provided in this newsletter.

Q. What effect do chlorofluorocarbons have on stratospheric ozone depletion?

A. Ozone is a gas located in the stratosphere which forms a protective layer that absorbs harmful ultraviolet radiation from the sun. Ozone depletion may harm humans and the environment. For example, scientists estimate that for each one percent reduction in ozone concentration, the incidence of non-melanoma skin cancer among caucasians will increase two to four percent. Ozone depletion may affect the earth's climate, alter pesticide effectiveness, reduce some crop yields and disrupt aquatic and land ecosystems. Chlorofluorocarbons (CFC) are chemical compounds used in aerosol sprays, air conditioning, refrigeration, plastic foams, fire extinguishing agents, and cleaning solvents. CFC chemical stability makes it possible for the compounds to resist decomposition when released into the troposhere. As CFCs diffuse into the stratosphere, ultraviolet radiation from the sun decomposes the compound and releases chlorine atoms, which in turn may destroy the protective ozone layer.

A National Academy of Sciences report states that there is a 95% probability factor that the true value of ozone reduction lies between 5 and 28 percent. A report by the Department of the Environment of the United Kingdom predicts that if the release of CFC continues at 1975 rates, ozone will be reduced by 13%, with half of this occurring within fifty years. However, the effects of CFC cannot be isolated. Other man-made pollutants may add to ozone reduction. Major uncertainties, such as the rate at which worldwide CFC emission will continue, must be clarified before the effect of CFC on ozone depletion is determined.

Q. What information is available on TCE contamination?

A. Recently, various communities in Massachusetts have been exposed to extremely high levels of tetrachloroethyl (TCE). TCE is an industrial chemical used by manufactu when applying vinyl to asbestos cement water pipes. It has been estimated that nearly 700 miles of vinyl lined asbestos cement water pipes have been installed in Massachusetts in the past twelve years. EPA issues guidelines called Suggested No Adverse Response Level (SNARL) for various contaminants, that indicate an acceptable level of consumption. Because TCE is considered a possible carcinogen, EPA has proposed that the SNARL for TCE contamination be 20 parts per billion for lifetime exposure (70 years), and 175 parts per billion for a ten day exposure. Contamination in some areas of Massachusetts has reached levels of 3,500 parts per billion. State and Federal agencies have made a concentrated effort to lower the levels of TCE to protect the public health. As part of this effort, the SRO has requested information from other states to determine what their experience has been with TCE contamination. Our office has available a summary of responses from several states.

Q. What communities in Massachusetts have energy conservation plans?

A. Many communities have developed conservation plans ranging in detail from a few general proposals to several volumes. The SRO contacted 80 cities and towns, and all counties in the Commonwealth to obtain copies of these plans. The SRO has listed these proposals from various communities by the following categories: life cycle costing of vehicles by municipality, life cycle costing of energy systems in all public buildings, bicycle path construction, car/van pooling, energy audit of public buildings, schools, and hospitals, and modernized lighting installations. This categorization allows those interested in a particular kind of conservation proposal to contact the SRO for more information on communities which have implemented such proposals.

__ Ozone: Potential effects of Aerosol Spray
__ Public Drinking Water: Sources
__ S.12: Potential Energy Savings of Energy Audits
__ Sludge: An issue brief
__ Smoke Detectors: Radiation threats?
__ Smoking: Health effects of passive smoking
__ TCE contamination: 50 State Survey
__ Thermal Pollution: An issue brief (*)
__ Truth-in-Testing: An issue brief
__ Two Hundred Mile Fishing Limit: Effects on Cod, Haddock, and Flounders
__ Unemployment in rural Massachusetts: Statistics
__ Vehicle Emissions Inspection/Maintenance Programs: A Survey (NCSL) (*)
__ Water Conservation: An issue brief
__ Water Shortage: An issue brief

For any other information:

Name:_____ Room #:_____

Inquiry:_____

_____

_____

_____

_____

Suggestions for new sections of RESOURCE:

_____

_____

Feature

Topics of interest to members of the Massachusetts General Court.

Science Intern Program

The SRO has selected five students to participate in the fall internship program. They are George Sundstrom, a student at the Harvard School of Public Health, working toward a Masters of Science degree in Environmental Health Management and Pollution Control; Elizabeth Carpenter, working toward a Master of Science degree in Science Writing at MIT; Benjamin Kermin, an MIT senior and candidate for a Bachelor of Science degree in Biology/Literature; Steven DelVecchio, a senior at Boston University majoring in Political Science; and Deborah Levesque, a senior at Merrimack College majoring in Environmental Sciences.

Program Opportunity Notice

The Massachusetts Executive Office of Energy Resources seeks to support projects making use of alternative energy technologies. The Alternative Energy Property Program is soliciting proposals from publicly owned facilities for the use of cost-effective, innovative renewable energy technology. The Secretary of Energy Resources seeks proposals in the following categories: solar thermal (space heating/cooling, hot water), solar electric (includes wind and photovoltaics), hydroelectric development, and wood/alcohol/biomass. The Program is supported by $5 million, and funds will be divided among the four categories according to the ability of submissions to meet the Program's goals. First preference will be given to projects able to demonstrate shortest payback periods, and special consideration given to particularly innovative proposals. Buildings and facilities owned by eligible entities may receive up to 50% of the cost of design, engineering and construction work. For further information, contact Program Manager George Lagassa at EOER, 727-4732.

New Additions to the SRO Library

The SRO is adding continually to its files and shelves. *Resource* will list each month a few of the newly acquired reports. To borrow these, or to inquire about reports on other topics, please use the *Order Form*.

Economy

- U.S. Department of Housing and Urban Development: Targeting Community Development, January 1980.
- The Data Resources Review of the U.S. Economy, June, July, August and September 1980.
- U.S. GAO Report: Spending Grant Funds More Efficiently Could Save Millions, June 1980.

Energy

- Northeast Solar Energy Center: Crude Oil Windfall Profits Tax Act of 1980: Incentives for Use of Renewable Energy Systems.
- U.S. GAO Report: Energy Conservation: An Expanding Program Needing More Direction, June 1980.
- Central Naugatuck Valley Regional Planning Agency: Meeting the Energy Crisis, New Considerations for Planning and Zoning in the 80's.

Environment

- New England River Basins Commission: Before The Well Runs Dry, Urban Water Conservation Project.
- U.S. Nuclear Regulatory Commission: Handling and Storage of Spent Light Water Power Reactor Fuel.

Health, Safety, and Human Services

- New York State Department of Health: Organic Chemicals and Drinking Water.
- Geiger, B. and White, A., Consumer Attitudes and Behavior Concerning Drug Product Selection.

Order Form

All prepared memos and issue briefs are available to any legislative office. To obtain copies, please check the appropriate title. If you would like information on any other subject, or would like to use an SRO service, write your request below or call Jeremy David Eden, Research Co-ordinator, at 727-8836.

(* New Additions)

__ Acid Rain: An issue brief
__ Agent Orange: An annotated bibliography
__ Boston Area Utility Statistics
__ Cancer Registry: An issue brief
__ Conservation Plans in Massachusetts Cities & Towns
__ Darvon
__ Drinking & Driving: Effects of law raising the drinking age (*)
__ Effluent Permits: A description (*)
__ Flexitime: An issue brief
__ Four-day Work Week: An issue brief
__ Garbage to Energy: Potential and Technology
__ Gasohol: Survey of Government Fleet Use
__ Generic Drug Laws: How effective?
__ Ground Water Management and Protection: Alternative State Legislative Policies (NCSL) (*)
__ Gun Control: A bibliography
__ High Voltage Power Line: Health and Environmental Effects (*)
__ Hospice
__ Indoor Air Pollution: An issue brief (*)
__ Innovative Farming Techniques
__ Liquid Energy Gases: Accidents with LEG
__ Living Wills: Reaction of religious groups
__ Massachusetts Economic Policy Analysis (MEPA):
  __ July 1980 Forecast
  __ Policy Simulation #34 Establishment of Sufficient In-State Hazardous Waste Sites
  __ Policy Simulation #35: Vouchers for low-cost residential conservation measures
  __ An overview of the MEPA model and its use from 1977 through 1980
__ Massachusetts Energy Tax Incentives: A list
Massachusetts Solar Legislation: A list

Calendar

For more detailed information about the events listed below, contact the Science Resource Office at 727-8836

October 16-19, Cancer Dialogue '80: An International Symposium of Physicians, Scientists and Researchers, sponsored by Omega Institute. Location: Grand Hyatt Hotel, New York City.

October 18, Solar Greenhouse Design, Construction and Maintenance, sponsored by the Rural Education Center, Inc. Location: Stonyfield Farm, Wilton, New Hampshire.

October 19-26, The Fifth National Passive Solar Conference, sponsored by the New England Solar Energy Association. Location: University of Massachusetts/ Amherst.

October 20, Federal Tax Policy Briefing, sponsored by the New England Council's Taxation and Business Regulation Coordinating Group. Location: Massachusetts Mutual Life Insurance Company, Springfield.

October 22-25, Northeast Conference on Hazardous Waste, sponsored by the University of New Hampshire Environmental Research Laboratory. Location: Portsmouth, New Hampshire.

October 23, Ninth Annual Sea Grant Lecture and Symposium; Georges Bank: Fish and Fuel, sponsored by the Sea Grant College Program, MIT. Location: Kresge Auditorium, MIT.

October 30, A seminar to interpret the Resource Conservation and Recovery Act, sponsored by the New England Legal Foundation. Location: First National Bank, Boston.

SRO Services

These services are available to any Legislator or staff member and may be requested on the *Order Form*.

Inquiry Service

If you need information, the SRO either has it, or can find it quickly. We have thousands of documents on file, and are in touch with hundreds of individuals and organizations. Any legislator or staff member can use the inquiry service.

Politechs

Politechs is a computer communications network of state legislatures, agencies, and public resources used to share information throughout the country. The Politechs terminal is located in the Legislative Service Bureau, Room 527A and is jointly operated by the LSB and SRO. Use Politechs to find out if other states have information or solutions which you need.

Seminars

The SRO will arrange seminars with distinguished panelists to discuss issues of concern. Past seminars have covered topics such as the elderly and health care, and unified thrift banking systems. Any chairman interested in arranging a seminar should contact the SRO.

Economic Analysis

The Massachusetts Economic Policy Analysis will use their computer model to analyze the effect of any legislative proposal on the Massachusetts economy. MEPA also provides quarterly forecasts of the economy to the state legislature.